امتحانات رقم (1)

الترم الاول

Dakahlia Governorate Maths supervision	Exam No (1)□ 1st Sec - Jan. 2024	Subject : Mathematics□ Time : 3 Hours

[1] Choose the correct answer:

(1) If $(1 + i^4)(1 - i^7) = X + i\,y$, then $X + y =$ .....

a) i b) 4 c) 2 d) 1

(2) The discriminant of the quadratic equation $2X^2 + 5X + 4K = 0$ equal to zero, then the value of K = ...

a) ± 14 b) Zero c) $\pm\frac{25}{32}$ d) $\frac{25}{32}$

(3) In the quadratic equation $aX^2 - bX + C = 0$, if the sum of the roots equal the product of them, then b = ...

a) $-a$ b) a c) $-c$ d) c

(4) The quadratic equation whose roots are 3 , – 5 is .....

a) $X^2 + 2X - 15 = 0$ c) $X^2 - 2X - 15 = 0$

b) $X^2 - 2X + 15 = 0$ d) $X^2 + 2X + 15 = 0$

(5) The sign of the function F : F(x) = 6 – 2X is non-positive at .....

a) $X > 3$ b) $X \leq 3$ c) $X < 3$ d) $X \geq 3$

(6) The solution set of the inequality: $X^2 + 49 < 0$ in $\mathcal{R}$ is .....

a) $\varnothing$ b) $\mathcal{R}$ c) $[-7, 7]$ d) $\mathcal{R} - [-7, 7]$

(7) All function defined by the following rules are positive on R except.....,.....

a) $\mathcal{F}(x) = 3$ c) $\mathcal{F}(x) = X^2 - 3X + 3$

b) $\mathcal{F}(x) = X + 3$ d) $\mathcal{F}(x) = X^2 + X + 3$

(8) L , M are two roots of the equation $X^2 - 21X + 4 = 0$, then $\sqrt{l} + \sqrt{m} =$

a) 25 c) – 5

b) 5 d) ± 5

(9) A radian measure of a central angle subtends an arc whose length 3 cm. in a circle whose surface area is 16 cm^2 =.....rad

a) 1 b) 1.5 c) 1.75 d) 0.75

(10) The angle of measure $\frac{31\pi}{6}$ lies in the .....quadrant

a) First b) Second c) Third d) Fourth

□

(11) If $\cos\theta > 0$, $\sin\theta = -\frac{\sqrt{3}}{2}$

Then a directed angle θ lies in the ..... quadrant

a) First b) Second c) Third d) Fourth

(12) If $\sin(2\theta) = \cos(4\theta)$, where θ is a positive acute angle

Then $\tan(90^\circ - 3\theta)$ = ...

a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

(13) The range of the function F : $F(x) = \frac{\cos X}{5}$ where $X \in R$ is .....

a) $[-\frac{1}{5}, \frac{1}{5}]$ b) $[-1, 1]$ c) $[-5, 5]$ d) $[0, \frac{2}{5}]$

(14) If the terminal side of a directed angle θ in the standard position intersect the unit circle at $(-\frac{\sqrt{3}}{2}, Y)$ where $Y \in Z^+$, then θ = ...°

a) 30 b) 150 c) 210 d) 330

(15) If Two rectangles are similar, the two dimension lengths of the first rectangle are 12 cm., 8 cm. and the perimeter of the second rectangle = 60 cm. , then the length of the second rectangle= ..... cm.

a) 12 b) 18 c) 24 d) 16

(16) In the opposite figure:

AD = 3 cm. , DC= 5 cm. , H is midpoint of $\overline{BC}$

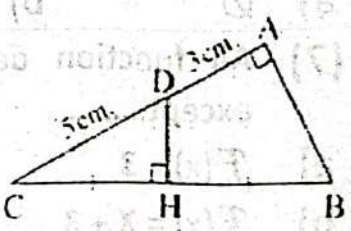
, then HC = ... cm= ..... cm

a) $2\sqrt{2}$

b) $2\sqrt{5}$

c) 4

d) 5



(17) If $\Delta ABC \sim \Delta DEF$, $a(\Delta ABC) = 9\, a(\Delta DEF)$ and DE = 4 cm, then AB = ... cm

a) $\frac{4}{3}$ b) 12 c) 9 d) 36

(18) In the opposite figure:

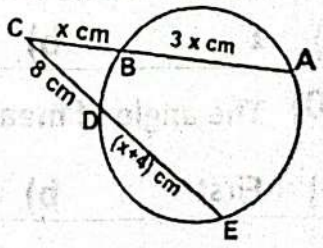
X = ... cm

a) 3

b) 5

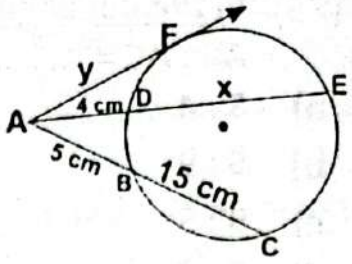
c) 6

d) 9



(19) In the opposite figure:

X + Y = ... cm



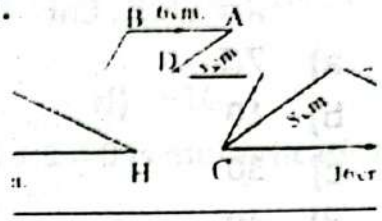
a) 9 c) 22

b) 18 d) 31

(20) In the opposite figure:

AD = 4 cm. , CH= 16 cm. , AB= 6 cm. , DC= 8 cm.

, then $\frac{HD}{BC}$ = ...



a) $\frac{4}{3}$ b) $\frac{2}{3}$

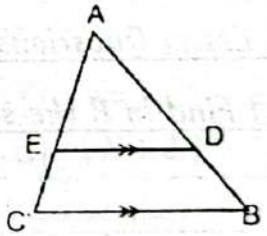
c) $\frac{3}{4}$ d) $\frac{1}{2}$

(21) Two similar polygons, the ratio between their perimeters equal 4 : 9, then ratio between the lengths of two corresponding sides is .....

a) 4 : 9 b) 2 : 3 c) 16 : 81 d) 9 : 4

(22) In the opposite figure:

All the following states must be true except.....



a) $\frac{AD}{BD} = \frac{AE}{EC}$ c) $\frac{AD}{BD} = \frac{AE}{AC}$

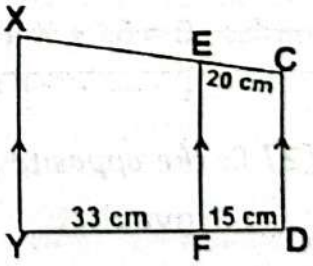
b) $\frac{AD}{BA} = \frac{DE}{BC}$ d) $\frac{AB}{BD} = \frac{AC}{EC}$

(23) In the opposite figure:

$\overline{CD}$ // $\overline{EF}$ // $\overline{XY}$, CE = 20 cm ,

DF = 15 cm , FY = 33 cm

Then CX = ... Cm

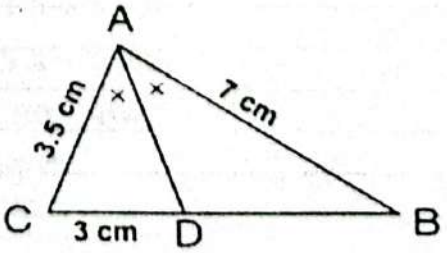


a) 48 c) 44

b) 64 d) 21

(24) In the opposite figure:

BD = ... cm



a) 4.5

b) 5

c) 4.9

d) 6

(25) In the opposite figure:

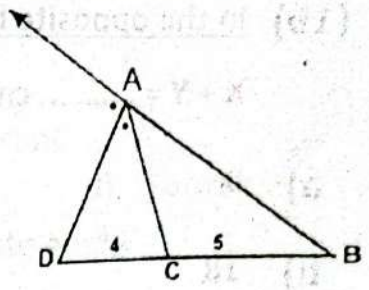
AB : AC = ...

a) 5 : 4

b) 5 : 9

c) 9 : 5

d) 9 : 4



(26) In the opposite figure:

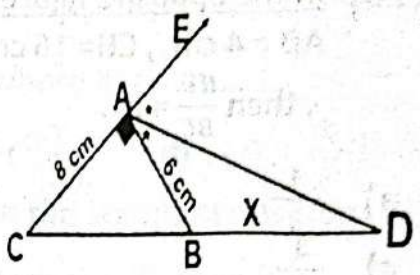
X = ... Cm

a) 7.5

b) 10

c) 30

d) 40



(27) If $P_M(A) = r$, then the point A lies .....

a) Outside the circle

b) Inside the circle

c) On the circle

d) On the center of the circle

❒ *Essay Questions*

[1] Find in R the solution set of the inequality:

$$X^2 - 3X - 4 \leq 0$$

.....

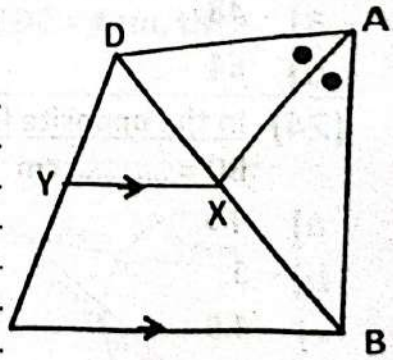
.....

.....

.....

[2] In the opposite figure:

Prove that: $\frac{DY}{YC} = \frac{AD}{AB}$



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Dakahlia Governorate Maths supervision	Exam No (2)□ 1st Sec - Jan. 2024	Subject : Mathematics□ Time : 3 Hours

[1] Choose the correct answer:

(1) If two roots of the equation: $(X - K)^2 + 4X = 0$ are additive inverse to each other, then K= .....

a) -2 b) Zero c) 2 d) 4

(2) If the sign of $f(x) = k x - 10$ is positive on $]5, \infty[$ and negative on $]-\infty, 5[$ then k = ...

a) 5 b) −2 c) 2 d) −10

(3) If one of two roots of the equation: $m X^2 - 3X + 1 = 0$ is multiplicative inverse of the other, then m = ...

a) −3 b) 1 c) −1 d) 2

(4) If L , M are two roots of the equation: $x^2 - x - 2 = 0$ where L > M, then $2L + 5M^2$ = ...

a) $X^2 + 2X - 15 = 0$ c) $X^2 - 2X - 15 = 0$

b) $X^2 - 2X + 15 = 0$ d) $X^2 + 2X + 15 = 0$

(5) The function which has a positive sign in $\mathcal{R} - \{2\}$ is f (x) = ...

a) (X−2)(X+2) b) $X^2 - 4x + 4$ c) X − 2 d) $(X + 2)^2$

(6) The solution set of the inequality: $X^2 + 49 < 0$ in $\mathcal{R}$ is .....

a) $\varnothing$ b) $\mathcal{R}$ c) $[-7, 7]$ d) $\mathcal{R} - [-7, 7]$

(7) (3 + i) is one of two roots of the equation : $X^2 + kX + 10 = 0$, where the coefficient of its terms are real number , then k = ...

a) 6 c) −6

b) 9 d) −9

(8) L , M are two roots of the equation $X^2 - 3X = -5$, then the equation whose two roots (L + 1) , (M + 1) is .....

a) $X^2 - 9X + 5 = 0$ c) $X^2 + 3X + 5 = 0$

b) $X^2 - 5X + 9 = 0$ d) $X^2 - 5X - 3 = 0$

(9) If sin (A+ 15) = Cos (A+ 25) where , $0 < A < 90°$, then A= .....

a) $-\theta$ b) $\theta - 180$ c) $\theta - 360°$ d) $360°$

(10) The angle of measure 490 °lies in the .....quadrant

a) First b) Second c) Third d) Fourth

(11) The central angle with measure 120° and includes an arc with length L cm. in a circle with radius 6 cm. , then L ≈.....cm.

a) 12.57 b) 10 c) 125.4 d) 1.254

(12) If the terminal side of the angle θ in its standard position , cuts the unit circle at point $(\frac{3}{5}, y)$ where y > 0 , then tan (θ) = ...

a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

(13) If sin (θ) = $\frac{3}{5}$ where θ is a positive acute angle, then sin (180 + θ) cos (360 - θ) + sin (90 + θ) = ...

a) $\frac{4}{5}$ b) $\frac{5}{4}$ c) $-\frac{3}{5}$ d) Zero

(14) Tan 495° = ...

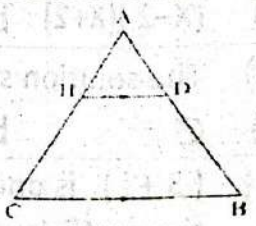
a) 1 b) - 1 c) $2\frac{1}{2}$ d) $\frac{1}{2}$

(15) Two similar polygons , the ratio between their areas is 4 : 25 , then the ratio between their perimeters is .....

a) 2 : 5 b) 5 : 2 c) 4 : 25 d) 8 : 625

(16) In the opposite figure:

$\overline{HD} // \overline{BC}$, $\frac{DH}{BC} = \frac{3}{8}$,then AD : DB = ... : .....

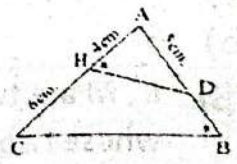


a) 8 : 3 c) 3 : 5

b) 5 : 3 d) 11 : 8

(17) In the opposite figure:

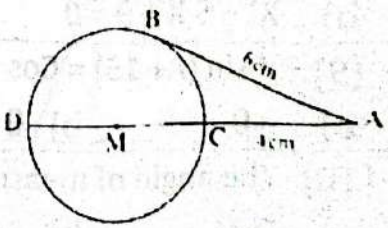
BD = ... cm.



a) $\frac{4}{3}$ b) 12 c) 9

(18) In the opposite figure:

If $\overrightarrow{AB}$ is a tangent to the circle M , then area of the circle= .....π cm^2

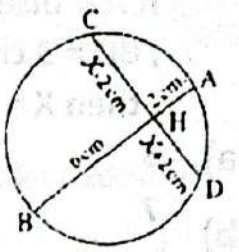


a) 6.25 c) 10

b) 25 d) 62.5

In the opposite figure:

(19) X = ... cm



a) 6 c) 4

b) 2 d) 10

(20) In the opposite figure:

If the perimeter of the triangle ABC = 28 cm.

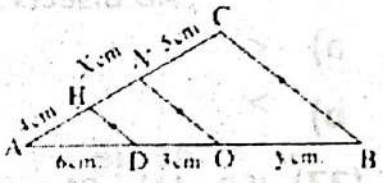
, AB= 12 cm. , AC= 9 cm. , $\overrightarrow{AD}$ bisects ∠ BAC

, then BD x DC= ..... cm^2

a) 9 b) 16 c) 7 d) 12

(21) In the opposite figure:

X + y = ... Cm.



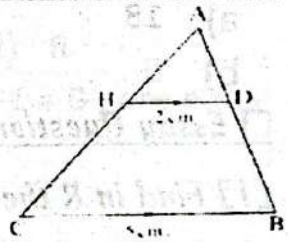
a) 4 : 9 b) 2 : 3

c) 16 : 81 d) 9 : 4

(22) In the opposite figure:

All If the area of triangle ADH = 24 cm^2 , $\overline{DH}$// $\overline{BC}$

, then the area of the shape DBCH = ... cm^2



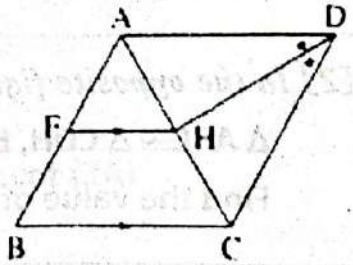
a) 36 c) 136

b) 126 d) 100

(23) In the opposite figure:

$\overline{FH}$ // $\overline{BC}$, $\overrightarrow{DH}$ bisects ∠ ADC

Then $\frac{AF}{FB}$ = ...



a) $\frac{HF}{CB}$ c) $\frac{CD}{DA}$

b) $\frac{CH}{HA}$ d) $\frac{AD}{DC}$

(24) In the opposite figure:

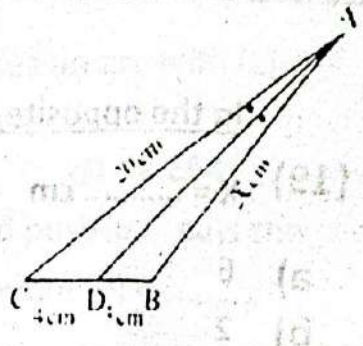
If $\overrightarrow{AD}$ bisects ∠ BAC , AC= 20 cm.

, BD = 3 cm. , DC= 4 cm

, then X = ... cm.

a) 3 c) 15 c) 15

b) 7 d) 24 d) 24

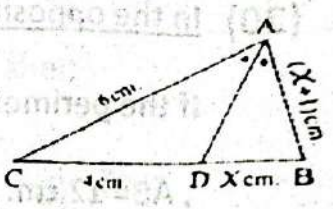


(25) In the opposite figure:

X = ... Cm.

a) 3 c) 2

b) 4 d) 1



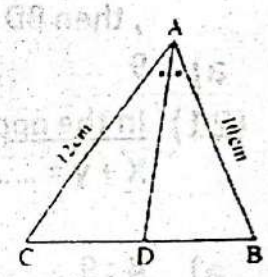
(26) In the opposite figure:

Δ ABC in which AB= 10 cm. , AC= 12 cm.

, AD bisects ∠ A , then BD ..... DC

a) < c) =

b) > d) $\frac{1}{2}$



(27) If P_M (A) = 81 and $\overrightarrow{AB}$ is a tangent of the circle M , then AB =.....

a) 18 c) 6

b) 9 d) 36

❒ *Essay Questions*

[1] Find in R the solution set of the inequality:

$X^2 - 5X + 6 \leq 0$

.....

.....

.....

[2] In the opposite figure:

Δ ABC ~ Δ CDH, BC = $\frac{1}{2}$ DH

Find the value of each X , y ?

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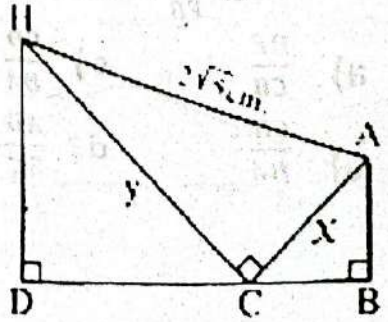


Dakahlia Governorate Maths supervision	Exam No (3) 1st Sec - Jan. 2024	Subject : Mathematics Time : 3 Hours

[1] Choose the correct answer:

(1) If one of two roots of the equation : $X^2 - (2k+6)X + 3k$ is additive inverse to the other ,then K= ...

a) -2 b) 0 c) ± 3 d) -3

(2) If $f : [-2, 4] \to R$ the sign of $f(x) = 2x - 4$ is non-negative on.....

a) $]2, 5[$ b) $[2, \infty[$ c) $[2, 5[$ d) $]2, \infty[$

(3) If one of two roots of the equation : $x^2 - (M+2)x + 3 = 0$ is additive inverse of the other , then m = ...

a) -3 b) 2 c) -2 d) 3

(4) If l , m are two roots of the equation: $x^2 - 5x - 7 = 0$,then $l^3 + m^3$ = ...

a) -238 c) 125

b) 343 d) 230

(5) If $4x + 2yi = 8 + 4i$, then x + y =.....

a) -2 b) 4 c) 9 d) 16

(6) The solution set of the inequality: $X^2 + 4 > 0$ in R is .....

a) $\varnothing$ b) $]-2, 2[$ c) $R - [-2, 2]$ d) R

(7) If the two roots of the equation: $kx^2 + (k+1)x + 1 = 0$, are equal real numbers , then k = ...

a) 1 c) 4

b) -1 d) 3

(8) l , m are two roots of the equation $3X^2 + bX + c = 0$, , $l > m$, $b^2 - 12c = 36$ then $l - m$ = ...

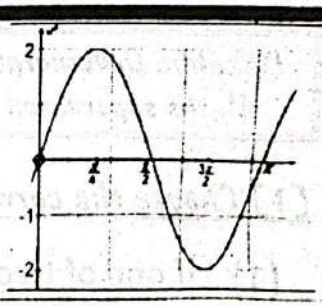
a) 2 c) $2\sqrt{3}$

b) 9 d) 12

(9) The general solution of the equation: sin (3A) = cot (2A)
Is A=.....+ $\frac{\pi}{6}$ n, $n \in z$

a) $\frac{\pi}{3}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{9}$ d) $\frac{\pi}{12}$

(10) The function f : f(x) = ...



a) 2 sin x b) Sin 2x

c) Sin x d) 2 sin 2x

(11) The arc length in a circle of radius 6 cm. , opposite to The central angle with measure $\frac{\pi}{2}$ is .....

a) $\frac{3\pi}{2}$ b) $\frac{5\pi}{2}$ c) 2π d) 3π

(12) If the terminal side of the angle (90 – θ) in its standard position , cuts the unit circle at point (0.6 , y) where y > 0 , then sec (θ)+tan (θ)....

a) 2 b) 3 c) $\frac{59}{24}$ d) $\frac{32}{15}$

(13) If sin (θ) = $\frac{1}{2}$, cos (θ) = $-\frac{\sqrt{3}}{3}$,then θ = ...°

a) $\frac{\pi}{6}$ b) $\frac{5\pi}{6}$ c) $\frac{7\pi}{6}$ d) $\frac{11\pi}{6}$

(14) If 2sin (90°+ θ)= $\sqrt{3}$,where θ is the greatest negative angle, then sin (3 θ)= .....

a) 1 b) $-\frac{1}{2}$ c) 0 d) −1

(15) The exterior bisector at the vertex of an isosceles triangle ..... to the base

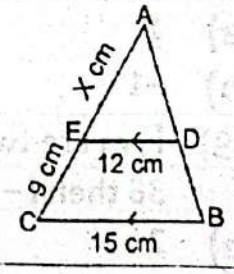
a) parallel b) bisect c) equal d) perpendicular

(16) In the opposite figure:

x= .....

a) 2.5 c) 8

b) 1.5 d) 4

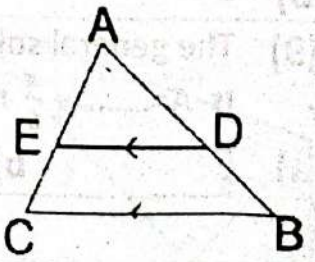


(17) In the opposite figure:

If $\overline{XY} \,//\, \overline{BC}$, $\frac{AX}{XB} = \frac{5}{3}$, then $\frac{XY}{BC}$ = ...

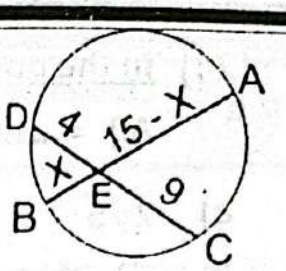
a) $\frac{5}{3}$ b) $\frac{5}{8}$

c) $\frac{5}{2}$ d) $\frac{8}{5}$



(18) In the opposite figure:

Sum of Possible values of X = ...

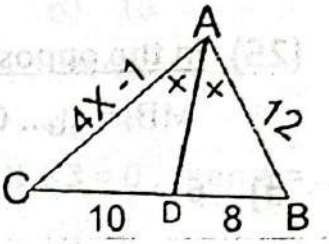


a) 10 c) 12

b) 15 d) 16

In the opposite figure:

(19) X =.....

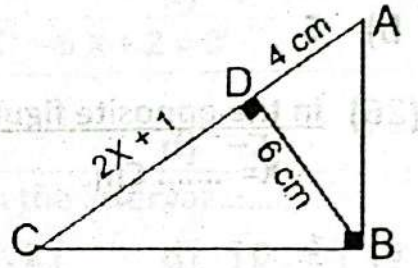


a) 15 c) 10

b) 4 d.) 3

(20) In the opposite figure:

X = ...cm

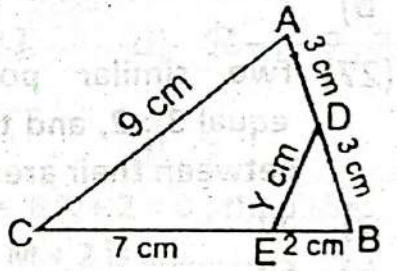


a) 9 c) 2.5

b) 4 d) 1

(21) In the opposite figure:

y = ... Cm.



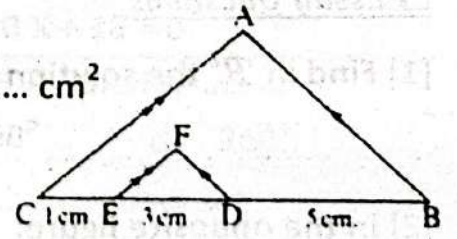
a) 2 c) 5

b) 3 d) 7

(22) In the opposite figure:

ea of Δ DEF = 6 cm^2 , $\overline{DF}$// $\overline{AB}$, $\overline{EF}$// $\overline{AC}$

, then the area of the shape BDFECA = ... cm^2

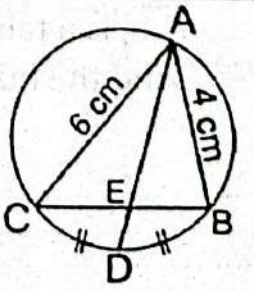


a) 36 c) 136

b) 126 d) 100

(23) In the opposite figure:

$\frac{BE}{CE}$ = ...

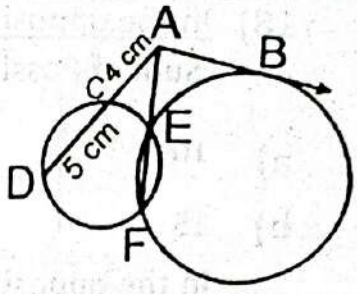


a) $\frac{4}{5}$ c) $\frac{3}{4}$

b) $\frac{2}{3}$ d) $\frac{1}{2}$

(24) In the opposite figure:

AB = ...cm

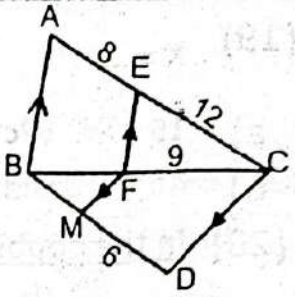


a) $2\sqrt{5}$ c) 6

b) $4\sqrt{5}$ D) $2\sqrt{3}$

(25) In the opposite figure:

MB = ... Cm.

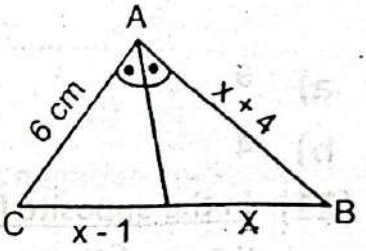


a) 6 c) 4

b) 5 d) 3

(26) In the opposite figure:

X= ..... Cm.



a) 1 c) 3

b) 2 d) 4

(27) Two similar polygons, the ratio between their perimeters equal 3 : 2, and the sum of their areas 130 cm^2 then the difference between their areas is ..... cm^2

a) 50 c) 70

b) 60 d) 80

❒ *Essay Questions*

[1] Find in $\mathcal{R}^2$ the solution set of the inequality: $X^2 - 7X + 6 > 0$

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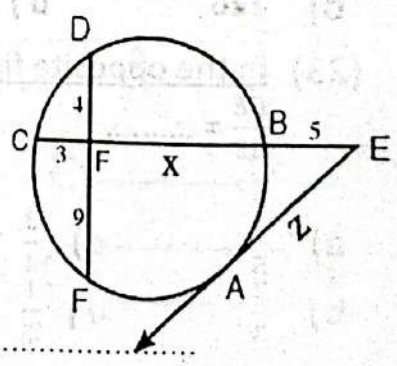
[2] In the opposite figure:

$\overrightarrow{EA}$, is a tangent to the circle.

Find the numerical values of X , Z



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Dakahlia Governorate Maths supervision	Exam No (4)□ 1st Sec - Jan. 2024	Subject : Mathematics□ Time : 3 Hours

[1] Choose the correct answer:

(1) If the equation : $X^2 - 6X + m = 0$ has two equal real roots , then m =...

a) 7 b) 8 c) 9 d) 10

(2) If the sign of $f(x) = 8 - mX$ is positive on $]-2, \infty[$, then k = ...

a) 8 b) -2 c) 16 d) 4

(3) If X = 3 is one of the roots of the equation : $X^2 - aX + 3 = 0$, then a = ..

a) 5 b) 4 c) 6 d) 2

(4) If L and M are the roots of the equation: $X^2 - 6X + 2 = 0$
Then $L^2 - 6L$ =.....

a) 2 b) 4 c) 3 d) −2

(5) The sign function $f(x) = 2 - X$ is positive in the interval .....

a) $]2, \infty[$ b) $]-2, \infty[$ c) $]-\infty, 2[$ d) $]0, \infty[$

(6) The solution set of the inequality: $9 - X^2 < 0$ in $\mathcal{R}$ is .....

a) $\varnothing$ b) $\mathcal{R}$ c) $[-7, 7]$ d) $\mathcal{R} - [-7, 7]$

(7) If $a = 5 + \sqrt{3}\,i$, $b = 5 - \sqrt{3}\,i$,then ab = ...

a) 28 b) 21 c) 25 d) 7

(8) If L and M are the roots of the equation : $X^2 - 6X + 2 = 0$, then the quadratic equation whose roots are : L + 2 , M + 2 is .....

a) $X^2 - 2X + 16 = 0$ c) $X^2 - X - 16 = 0$

b) $X^2 - 9X + 16 = 0$ d) $X^2 - 10X + 18 = 0$

(9) If $\sin(A + 15) = \cos(A + 25)$ where , $0 < A < 90°$, then A=.....

a) $-\theta$ b) $\theta - 180$ c) $\theta - 360°$ d) $360°$

(10) The angle of measure 490 °lies in the .....quadrant

a) First b) Second c) Third d) Fourth

(11) The central angle with measure 120° and includes an arc with length L cm. in a circle with radius 6 cm. , then L ≈.....cm.

a) 12.57 b) 10 c) 125.4 d) 1.254

(12) Tan 495° = ...

a) 1 b) −1 c) $2\frac{1}{2}$ d) $\frac{1}{2}$

(13) If the terminal side of the angle θ in its standard position , cuts the unit circle at point $\left(\frac{3}{5}, y\right)$ where y > 0 , then tan (θ) = ...

a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

(14) If $\sin(\theta) = \frac{3}{5}$ where θ is a positive acute angle, then $\sin(180 + \theta)\cos(360 - \theta) + \sin(90 + \theta)$ = ...

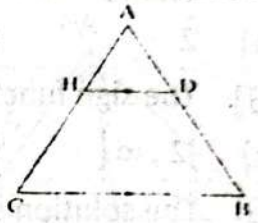
a) $\frac{4}{5}$ b) $\frac{5}{4}$ c) $-\frac{3}{5}$ d) Zero

(15) Two similar polygons , the ratio between their areas is 4 : 25 , then the ratio between their perimeters is .....

a) 2 : 5 b) 5 : 2 c) 4 : 25 d) 8 : 625

(16) In the opposite figure:

$\overline{HD} // \overline{BC}$, $\frac{DH}{BC} = \frac{3}{8}$,then AD : DB = ... : .....

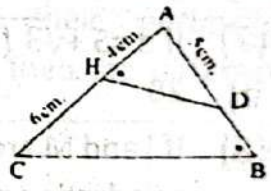


a) 8 : 3 c) 3 : 5

b) 5 : 3 d) 11 : 8

(17) In the opposite figure:

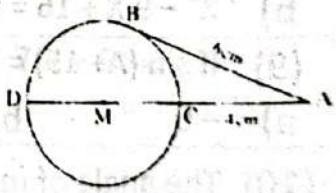
BD = ... cm.



a) $\frac{4}{3}$ b) 12 c) 9 d) 36

(18) In the opposite figure:

If $\overleftrightarrow{AB}$ is a tangent to the circle M , then area of the circle= .....π cm^2

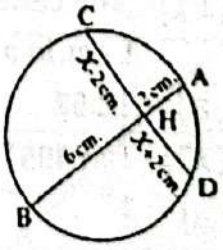


a) 6.25 c) 10

b) 25 d) 62.5

In the opposite figure:

(19) X = ... cm



a) 6 c) 4

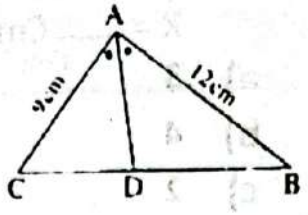
b) 2 d) 10

(20) In the opposite figure:

If the perimeter of the triangle ABC = 28 cm.

, AB= 12 cm. , AC= 9 cm. , $\overrightarrow{AD}$ bisects ∠ BAC

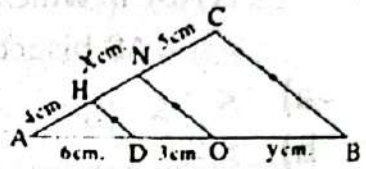
, then BD x DC= ..... cm^2



a) 9 b) 16 c) 7 d) 12

(21) In the opposite figure:

X + y = ... Cm.

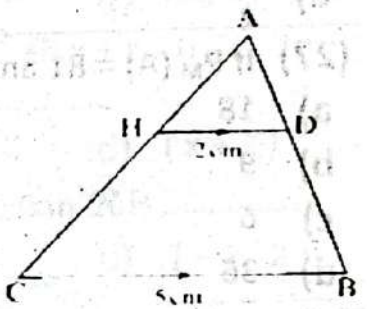


a) 4 : 9 b) 2 : 3 c) 16 : 81 d) 9 : 4

(22) In the opposite figure:

All If the area of triangle ADH = 24 cm^2 ,

$\overline{DH} // \overline{BC}$, , then the area of the shape DBCH = ... cm^2



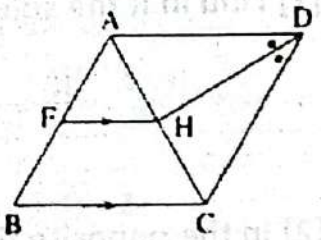
a) 36 c) 136

b) 126 d) 100

(23) In the opposite figure:

$\overline{FH} // \overline{BC}$, $\overrightarrow{DH}$ bisects ∠ ADC

Then $\frac{AF}{FB}$ = ...



a) $\frac{HF}{CB}$ c) $\frac{CD}{DA}$

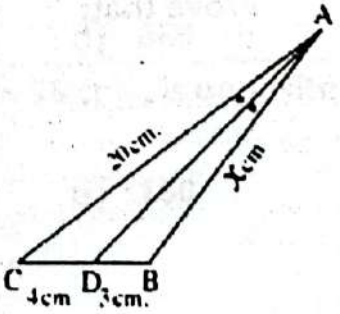
b) $\frac{CH}{HA}$ d) $\frac{AD}{DC}$

(24) In the opposite figure:

If $\overrightarrow{AD}$ bisects ∠ BAC , AC= 20 cm.

, BD = 3 cm. , DC= 4 cm

, then X = ... cm.



a) 3 c) 15

b) 7 d) 24

(25) In the opposite figure:

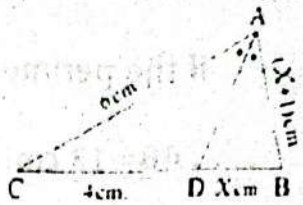
X = ... Cm.

a) 3

b) 4

c) 2

d) 1



(26) In the opposite figure:

Δ ABC in which AB= 10 cm. , AC= 12 cm.

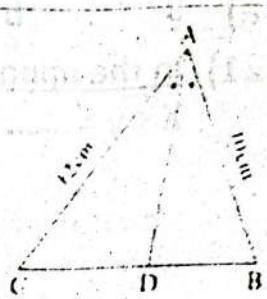
, AD bisects ∠ A , then BD ..... DC

a) <

b) >

c) =

d) $\frac{1}{2}$



(27) If P_M (A) = 81 and $\overrightarrow{AB}$ is a tangent of the circle M , then AB =.....

a) 18

b) 9

c) 6

d) 36

❐ *Essay Questions*

[1] Find in R the solution set of the inequality:

$(X + 5)(X - 1) > X + 5$

.....

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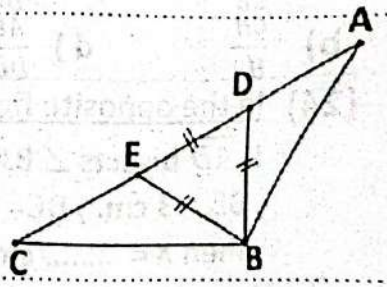
[2] In the opposite figure:

M (∠ ABC) = 120°, Δ BDE is an equilateral

Prove that: ① Δ ABD ~ Δ BCE

② AD × CE = $(ED)^2$



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Dakahlia Governorate Maths supervision	Exam No (5)□ 1st Sec - Jan. 2024	Subject : Mathematics□ Time : 3 Hours

[1] Choose the correct answer:

(1) If : $(y-4)^2 = 36$, $y < 0$, then $y + 4$ = ...

a) - 2 b) 10 c) 2 d) 14

(2) The function F : $F(x) = -(x-1)(2-x)$ is negative in the interval ....

a) $]1,2[$ b) $R - [1,2]$ c) $]1,-2[$ d) $[1,-2]$

(3) The common root between $x^2 - 3x + 2 = 0$, $2x^2 - 5x + 2 = 0$ is .....

a) 1 b) -2 c) $\frac{1}{2}$ d) 2

(4) If the two roots of the equation: $ax^2 + b = 0$ are real and different , then .....

a) $Ab > 0$ b) $A > 0, b > 0$ c) $a = 0$ d) $Ab < 0$

(5) The product of the roots of the equations: $ax^2 + bx + c = 0$, $bx^2 + cx + a = 0$, $cx^2 + ax + b = 0$ equals .....

a) $(X-2)(X+2)$ b) $X^2 - 4x + 4$ c) $X - 2$ d) $(x+2)^2$

(6) The solution set of the inequality: $-X(X+2) \geq 0$ in $\mathcal{R}$ is .....

a) $\{0, -2\}$ b) $[-2, 0]$ c) $]-2, 0[$ d) $[-2, 2]$

(7) $(1 + i^4)(1 - i^7) = x + yi$, then $x + y$ = ...

a) 4 b) 5 c) 2 d) 1

(8) L , l^2 are two roots of the equation $2X^2 + bX = -54$, then b=.....

a) -12 b) 6 c) -24 d) Zero

(9) If $A + B = 90°$,and Tan A = $\frac{1}{3}$,Then Tan B = ...

a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) 1 d) 3

(10) All the angle of the following measure lies in the second quadrant except .....°

a) -240 b) -120 c) 100 d) 860

(11) The arc of length 5π cm. in a circle with radius 15 cm. , is opposite to central of measure ..... °

a) 30 b) 60 c) 90 d) 180

(12) If the terminal side of the angle θ in its standard position , cuts the unit circle at point $\left(\frac{-\sqrt{3}}{2}, y\right)$ where y > 0 , then θ = ...°

a) 30 b) 150 c) 210 d) 330

(13) If csc (θ) = $\frac{1}{2}$, sin(θ) = $\frac{\sqrt{3}}{2}$,then the measure of angle θ is .....°

a) $\frac{\pi}{3}$ b) $\frac{5\pi}{6}$ c) $\frac{5\pi}{3}$ d) $\frac{11\pi}{6}$

(14) $\text{Tan}^{-1}\left(\frac{1}{\sqrt{3}}\right) + \text{Cos}^{-1}\left(\sqrt{3}\right)$ = ...

a) $\frac{\pi}{3}$ b) $\frac{\pi}{2}$ c) $\frac{3\pi}{2}$ d) $\frac{\pi}{6}$

(15) If k is the similarity factor of polygon P_1 to polygon P_2 and O < k < I , then the polygon P_1 is ..... To the polygon P_2

a) congruent b) A shrinking

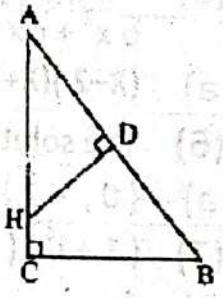
c) An enlargement d) Twice the area

(16) In the opposite figure:

Δ ABC ~ Δ AHD and if m (∠ B) = 3 X + 10° ,

And m (∠ AHD) = X + 30°,

Then m (∠A) =.....°



a) 50 c) 40

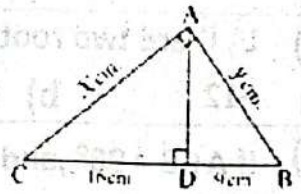
b) 30 d) 60

(17) In the opposite figure:

AC = X cm, AB = Y cm

DB = 9 cm , CD = 16 cm

Then $\frac{Y}{X}$ = ...



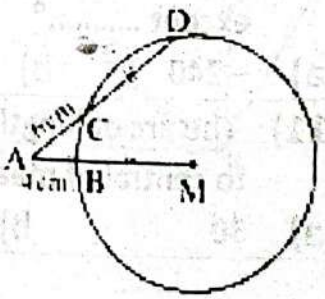
a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) 2 d) 1

(18) In the opposite figure:

If CD = BM , AC = 6 cm , AB = 4 cm

Then the circumference of the circle m

= ..... π cm^2



a) 15 c) 18

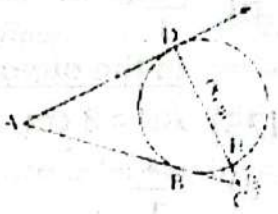
b) 20 d) 24

(19) In the opposite figure:

$\overrightarrow{AB}$, $\overrightarrow{AD}$ are two tangents at B , D

, $\overrightarrow{AB}$ cut the circle at H , D

if CH = 3 cm. , HD = 18 cm ,Then AC – AD =..... cm



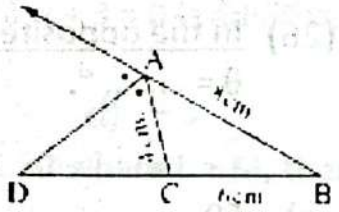
a) $\sqrt{7}$ c) $2\sqrt{7}$

b) $3\sqrt{7}$ d) $6\sqrt{7}$

(20) In the opposite figure:

AC = 4 cm , AB = 8 cm , BC = 6 cm

Then DC= .....



a) 2 b) 4 c) 6 d) 8

(21) In the opposite figure:

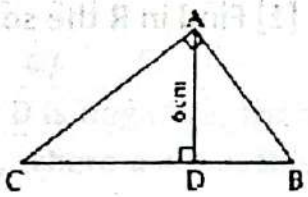
If $\frac{AH}{HB} = \frac{2}{3}$, AD = 7 cm , BC = 22 cm

then HO = ...cm

a) 9 b) 11 c) 13 d) 15

(22) In the opposite figure:

If AD = 6 cm., Tan B + tan C = $\frac{5}{3}$ then BC= ...cm.

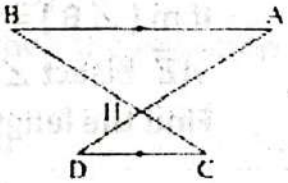


a) 36 c) 136

b) 126 d) 100

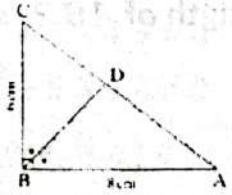
(23) In the opposite figure:

$\overline{AB}$ // $\overline{CD}$,2 AH = 3 HD , then BC= .....cm.



a) 18 c) 20

b) 24 d) 25



(24) In the opposite figure:

, AD = ... cm.

a) $5\frac{5}{7}$ c) $6\frac{3}{4}$

b) $\frac{4}{3}$ d) 5

In the opposite figure:

(25) AD = 8 cm, AH= 6 cm., then tan θ = ... Cm.

a) $\frac{-4}{3}$

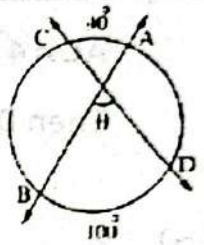
b) $\frac{-3}{4}$

c) $\frac{4}{3}$

d) $\frac{3}{4}$

(26) In the opposite figure:

θ = ... °.



a) 50 c) 140

b) 70 d) 60

(27) If M is a circle with diameter length 12 cm. A is a point in its plane and the power of the point A with respect to the circle M equals 13 cm. , then MA = ...cm.

a) 7 b) 14 c) 3.5 d) 6

❒ *Essay Questions*

[1] Find in R the solution set of the inequality: $X^2 - 2X - 8 \leq 0$

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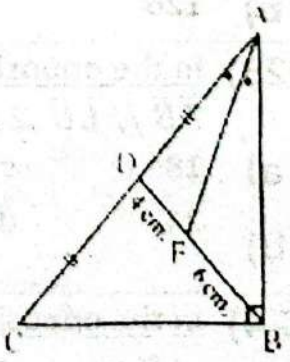
[2] In the opposite figure:

If m (∠ B) = 90° , D is midpoint of $\overline{AC}$,

$\overrightarrow{AE}$ bisect ∠ BAD , BE = 6 cm , ED = 4 cm.

Find the length of $\overline{AB}$?



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Dakahlia Governorate Maths supervision	Exam No (6) 1st Sec - Jan. 2024	Subject : Mathematics Time : 3 Hours

[1] Choose the correct answer:

(1) If two roots of the equation: $(X - K)^2 + 4X = 0$ are additive inverse to each other, then K= .....

a) -2 b) Zero c) 2 d) 4

(2) If the sign of $f(x) = 6 - 2x$ is non- positive on $]5, \infty[$ when .....

a) $X > 3$ b) $X \leq 3$ c) $X < 3$ d) $X \geq 3$

(3) If one of two roots of the equation: $x^2 - (k + 2)x + 3 = 0$ is additive inverse of the other root , then k = ...

a) 3 b) 2 c) -2 d) -3

(4) If L , M are two roots of the equation: $x^2 - x - 2 = 0$ where L > M, then $2L + 5M^2$ = ...

a) $X^2 + 2X - 15 = 0$ c) $X^2 - 2X - 15 = 0$

b) $X^2 - 2X + 15 = 0$ d) $X^2 + 2X + 15 = 0$

(5) The quadratic equation whose two roots are $(2 - 3i)(2 + 3i)$ is ...

a) $X^2 + 4x + 13 = 0$ c) $X^2 + 4x - 13 = 0$

b) $X^2 - 4x + 13 = 0$ d) $X^2 - 4x - 13 = 0$

(6) Which of the following does not belong to the solution set of the inequality: $3X - 5 < 4x - 3$?

a) -1 b) -2 c) -3 d) -5

(7) The discriminant of the equation: $ax^2 + bx + c = 0$ is negative, then the solution set of the inequality: $ax^2 + bx + c < 0$, where $a < 0$ in R is .....

a) R b) R^+ c) $\varnothing$ d) R^-

(8) L , M are two roots of the equation $X^2 - 3X = -5$, then the equation whose two roots $(L + 1)$, $(M + 1)$ is .....

a) $X^2 - 9X + 5 = 0$ c) $X^2 + 3X + 5 = 0$

b) $X^2 - 5X + 9 = 0$ d) $X^2 - 5X - 3 = 0$

(9) If $\tan(180 + 5\theta) + \tan(270 + 4\theta) = 0$ where, $\theta \in]0, \frac{\pi}{2}[$, then θ =.....°

a) 10 b) 20 c) 60 d) 45

(10) Measure of the central angle subtends an arc whose length equals the diameter of the circle= .....° (Rounded to the nearest degree)

a) 13 b) 115 c) 120 d) 180

□

(11) The central angle with measure 120° and includes an arc with length L cm. in a circle with radius 6 cm. , then L ≈.....cm.

a) 12.57 b) 10 c) 125.4 d) 1.254

(12) If the terminal side of the angle θ in its standard position , cuts the unit circle at point ($\frac{3}{5}$, y) where y > 0 , then tan (θ) = ...

a) -1 b) $\frac{1}{\sqrt{3}}$ c) 1 d) $\sqrt{3}$

(13) <u>In the opposite figure:</u>

A unit circle M and $\overline{AB}$ is a tangent to the circle

$\overline{CD} \perp \overline{MB}$,then $\frac{AB}{CD}$

a) Sec θ b) Cosec θ c) Tan θ d) Cos θ

(14) In the right angled- triangle , x is an acute angle where sin x = $\frac{4}{5}$ the cos (90 − x) = ...

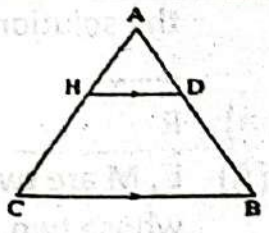
a) $\frac{3}{5}$ b) $\frac{-3}{5}$ c) $\frac{-4}{5}$ d) $\frac{4}{5}$

(15) Δ ABC ~ Δ AHD and AB = 2 LM , then $\frac{area\ of\ \Delta LMN}{\text{area of } \Delta ABC}$ =.....

a) 1 : 2 b) 2 c) 1 : 4 d) 4

(16) <u>In the opposite figure:</u>

$\overline{HD}$ // $\overline{BC}$, $\frac{DH}{BC} = \frac{3}{8}$,then AD : DB = ... : .....



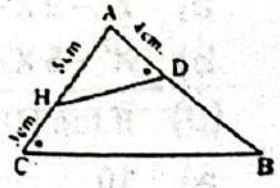
a) 8 : 3 c) 3 : 5

b) 5 : 3 d) 11 : 8

(17) <u>In the opposite figure:</u>

AD = 4 cm , AH = 5 cm .HC = 3 cm

M (∠ ADH) = m(∠ C) ,BD = ... cm.



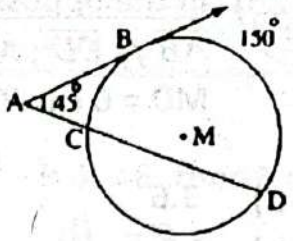
a) $\frac{4}{3}$ b) 12 c) 9 d) 36

(18) In the opposite figure:

If $\overrightarrow{AB}$ is a tangent to the circle M at B ,

m ($\angle$ A)= 45° , m ($\overset{\frown}{BD}$) = 150°

, then m ($\overset{\frown}{BC}$) = ... °



a) 120 c) 90

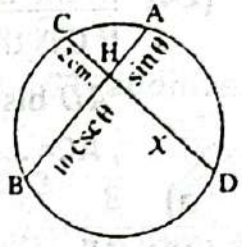
b) 60 d) 180

In the opposite figure:

(19) AB, CD are two chords in a circle, AB ∩ CD = { H }

AH= sin θ , HB = 10 Csc θ, $\frac{\pi}{2} > \theta > 0$, and HC = 2 cm

Then X = ... cm



a) 5 b) 10 c) $\frac{\sqrt{3}}{2}$ d) $10\sqrt{3}$

(20) In the opposite figure:

, BD = 6 cm. , DC = 10 cm. ,

, AC – AB=6 cm . , then AC = ... cm.

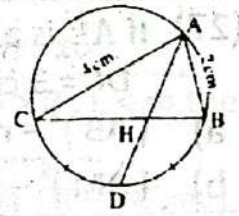
a) 13 b) 14 c) 15 d) 16

(21) In the opposite figure:

D is midpoint of $\overset{\frown}{CB}$, AB = 2 cm , AC =4 cm

Then:

BH : BC = ...



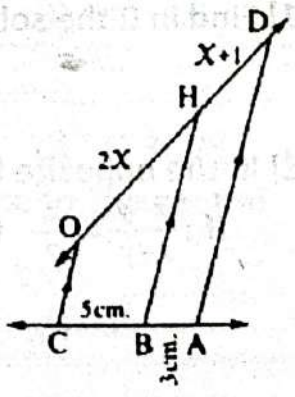
a) 1 : 1 b) 1 : 2 c) 2 : 1 d) 1 : 3

(22) In the opposite figure

$\overline{AD} // \overline{BH} // \overline{CO}$ AB = 3 cm , BC = 5 cm ,

DH = (x + 1) cm, HO = 2 x cm.

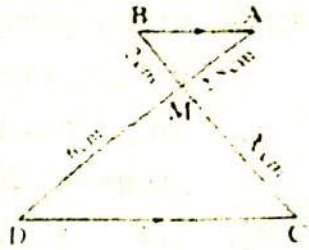
then x = ... cm



a) 3 d) 4

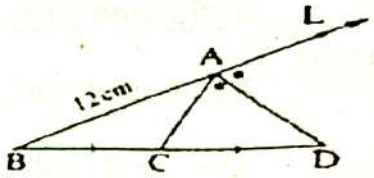
b) 5 c) 8

(23) In the opposite figure:
$\overline{AB}$ // $\overline{CD}$, AM = 2.5 cm. BM = 2 cm.
MD = 6 cm. Then x = ...



a) 3.6 c) 4
b) 4.2 d) 4.8

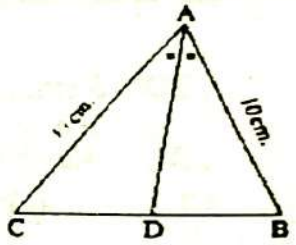
(24) In the opposite figure:
If C is the midpoint of $\overline{BD}$,
$\overrightarrow{AD}$ bisects ∠ LAC , AB= 12 cm.
, AC= ..... cm



a) 3 b) 8 c) 6 d) 9

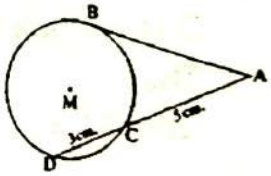
(25) All ..... are similar
a) triangle c) Parallelogram
b) rectangle d) Square

(26) In the opposite figure:
Δ ABC in which AB= 10 cm. , AC= 12 cm.
, AD bisects ∠ A , then BD ..... DC



a) < c) =
b) > d) $\frac{1}{2}$

(27) If $\overleftrightarrow{AB}$ is a tangent to the circle M at B ,
DC = 3 cm., CA =5 cm. P_M (A) =.....



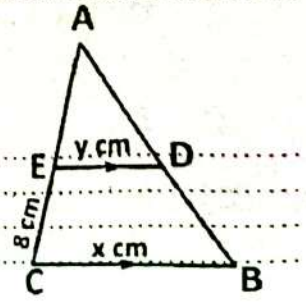
a) $(AB)^2 - r^2$ c) 25
b) $(AM)^2 - (AB)^2$ d) 40

❒ *Essay Questions*

[1] Find in R the solution set of the inequality: $-X^2 + X > 1$

.....
.....
.....

[2] In the opposite figure:
If : $\frac{x-y}{x+y} = \frac{2}{7}$ find AH?



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Dakahlia Governorate Maths supervision	Exam No (7)□ 1st Sec - Jan. 2024	Subject : Mathematics□ Time : 3 Hours

[1] Choose the correct answer:

(1) If $x = -1$ is one of two roots of the equation : $X^2 - k\ X = 6$,then K= ...

a) -5 b) 5 c) 6 d) -6

(2) the sign of $f(x) = -5$ is positive on .....

a) $]-\infty, -5[$ b) $]-5, \infty[$ c) R d) $\varnothing$

(3) If one of two roots of the equation : $x^2 - (M + 2)x + 3 = 0$ is additive inverse of the other , then m = ...

a) -3 b) 2 c) -2 d) 3

(4) If l , m are two roots of the equation: $x^2 + 3x - 4 = 0$,then $l^2 + 3l + m^2 + 3m - 4$ = ...

a) -4 b) -8 c) 4 d) 8

(5) If $4x + 2yi = 8 + 4i$, then $x + y$ =.....

a) -2 b) 4 c) 9 d) 16

(6) The solution set of the inequality: $X^2 + 49 = 0$ in $\mathcal{R}$ is .....

a) $\varnothing$ b) $\{-2\}$ c) $\{-3, 7\}$ d) $\{3\}$

(7) If the two roots of the equation : $4x^2 - 12\ x + c = 0$, are equal real numbers , then c = ...

a) 3 b) 4 c) 9 d) 16

(8) L , M are two roots of the equation $aX^2 + bX = -c$, $a > 0$, $L < m$ then the solution set of the inequality $aX^2 + bX + c < 0$ is .....

a) $]-\infty, L[$ b) $]m, \infty[$ c) $]L, m[$ d) $R - [L, m]$

(9) If $\tan(A + 20) = \cot(3A + 30)$ where , $0 \leq A \leq 90°$, then A=.....

a) 40 b) 10 c) 90 d) 50

(10) The range of the function $\mathcal{F}$: $\mathcal{F}(x) = 3 \sin 2x$ is .....

a) $[-2, 2]$ b) $]-2, 2[$ c) $[-3, 3]$ d) $]-3, 3[$

(11) The arc length in a circle of radius 6 cm. , opposite to The central angle with measure $\frac{\pi}{2}$ is .....

a) $\frac{3\pi}{2}$ b) $\frac{5\pi}{2}$ c) 2π d) 3π

(12) $\cos(90° - \theta) \times \csc\theta$ = ...

a) -1 b) zero c) 1 d) $\cot\theta$

(13) If $\sin(\theta) = -\frac{1}{2}$, $\cos(\theta) = -\frac{\sqrt{3}}{2}$,then θ = ...°

a) 30 b) 150 c) 210 d) 330

(14) If $\tan(180° + \theta) = 1$, where θ is the smallest positive angle, then θ = ...°

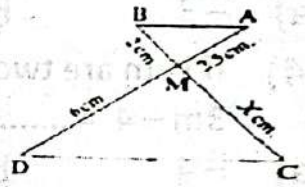
a) 60 b) 30 c) 45 d) 135

(15) The exterior bisector at the vertex of an isosceles triangle ..... to the base

a) parallel b) bisect c) equal d) perpendicular

(16) In the opposite figure:

X = ...



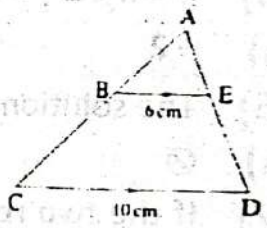
a) 3.6 c) 4

b) 4.2 d) 4.8

(17) In the opposite figure:

If $\overline{BE} \,//\, \overline{DC}$,

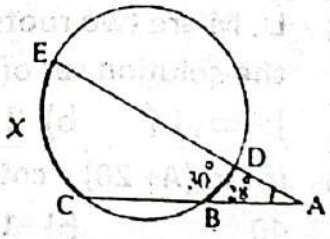
then $\frac{a(\Delta ABE)}{a(\text{trapezium } BCDE)}$ = ...



a) $\frac{25}{81}$ b) $\frac{3}{5}$ c) $\frac{9}{16}$ d) $\frac{9}{25}$

(18) In the opposite figure:

X = ...°



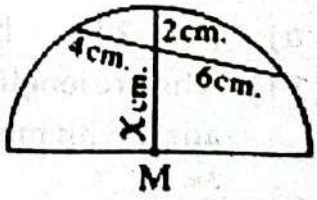
a) 30 c) 60

b) 86 d) 26

In the opposite figure:

(19) M is a center of semicircle,

then X =..... cm

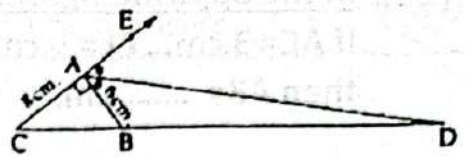


a) 36 c) 48

b) 54 d) 72

(20) In the opposite figure:

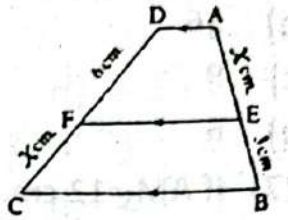
The area of Δ ABC = ... cm^2.



a) 4 b) 5 c) 6 d) 8

(21) In the opposite figure:

X = ... Cm.

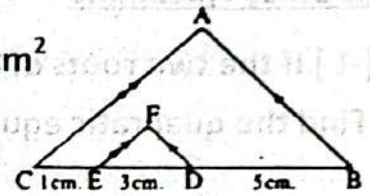


a) 6 b) $3\sqrt{2}$ c) $3\sqrt{3}$ d) 18

(22) In the opposite figure:

ea of Δ DEF = 6 cm^2 , $\overline{DF}$// $\overline{AB}$, $\overline{EF}$// $\overline{AC}$

, then the area of the shape BDFECA = ... cm^2

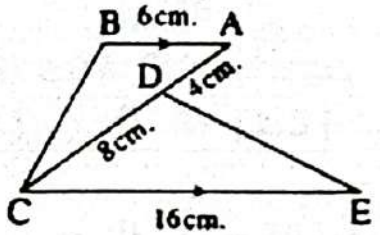


a) 36 c) 136

b) 126 d) 100

(23) In the opposite figure:

$\overline{AB}$ // $\overline{EC}$, Then $\frac{ED}{BC}$ = ...

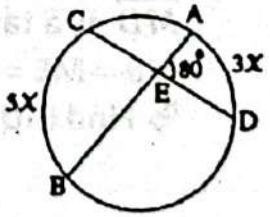


a) $\frac{4}{3}$ c) $\frac{3}{4}$

b) $\frac{2}{3}$ d) $\frac{1}{2}$

(24) In the opposite figure:

X = ... °

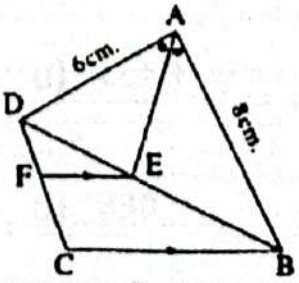


a) 10 c) 20

b) 30 d) 40

(25) In the opposite figure:

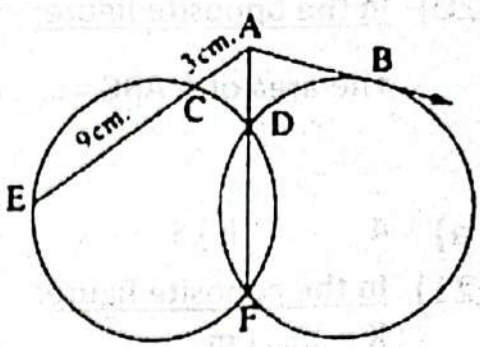
$\frac{DF}{FC}$ = ... Cm.



a) $\frac{4}{3}$ c) $\frac{2}{3}$

b) $\frac{8}{7}$ d) $\frac{3}{4}$

(26) In the opposite figure:
If AC= 3 cm. , CE= 9 cm.
then AB= ..... Cm.



a) 27
b) 36
c) 9
d) 6

(27) If AM =12 cm. , r = 9 cm. where A is a point outside the circle M ,then $P_M(A)$ = ...

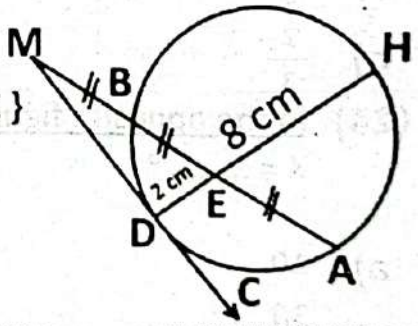
a) 65 b) 63 c) 49 d) 7

❒ Essay Questions

[1] If the two roots of the equation : $3X^2 + 5X - 7$ are L , m ,
Find the quadratic equation whose two roots are $L + \frac{1}{m}$, $m + \frac{1}{L}$

.....
.....
.....
.....
.....
.....
.....
.....

[2] In the opposite figure:
$\overrightarrow{MA}$ cuts the circle at B , A , $\overrightarrow{MA} \cap \overline{HE} = \{E\}$
$\overrightarrow{MD}$ is a tangent of the circle at D
MB = ME = EA , DE = 2 cm ., EH = 8cm..
↳ Find MD



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Dakahlia Governorate Maths supervision	Exam No (8)□ 1st Sec - Jan. 2024	Subject : Mathematics□ Time : 3 Hours

[1] Choose the correct answer:

(1) If the two roots of the equation : $3X^2 - 2k\ X - 4 = 0$ are different in sign then k = ...

a) -5 b) 5 c) 6 d) -6

(2) $(1+i)(1+i^2)(1+i^3)(1+i^4)$ .....$(1+i^{99})(1+i^{100})$ =.....

a) 1 b) 2 c) 0 d) 2^{100}

(3) If one of two roots of the equation : $x^2 - b\,x + c = 0$ is two odd consecutive numbers , then $b^2 - 4c$ = ...

a) -1 b) 2 c) 4 d) 3

(4) If l , l^2 are two roots of the equation: $2x^2 + k\,x + 16 = 0$,then k = ...

a) -12 b) 12 c) 6 d) -6

(5) If $(3 - i)$ is one of two roots of the equation : $x^2 - b\,x + c = 0$, Then b + c =...

a) 10 b) 4 c) 14 d) 16

(6) The solution set of the inequality: $(X-2)(X-3) \geq 0$ in $\mathcal{R}$ is .....

a)]2 , 3[b) [2 , 3] c) R – [2, 3] d) R –]2, 3[

(7) If $3x - 2y\,i = (5 - 2i)^2$, then y – x =.....

a) 3 b) -3 c) 17 d) $21 - 20\,i$

(8) If l , m are two roots of the equation $X^2 + X - 5 = 0$, $l^2 + m^2 + l + m$ = ...

a) 10 b) -10 c) 5 d) -5

(9) If tan (A+ 20) = cot (3A+ 30) where , $0 \leq A \leq 90°$, then A=.....

a) 40 b) 10 c) 90 d) 50

(10) The range of the function f : f(x) = 3 sin 2x is .....

a) [– 2 , 2] b)]– 2 , 2[c) [– 3 , 3] d)]– 3 , 3[

(11) Cos (90° – θ)× Csc θ = ...

a) -1 b) zero c) 1 d) Cot θ

(12) If $\sin(\theta) = -\frac{1}{2}$, $\cos(\theta) = -\frac{\sqrt{3}}{2}$,then θ = ...°

a) 30 b) 150 c) 210 d) 330

(13) The arc length in a circle of radius 6 cm. , opposite to The central angle with measure $\frac{\pi}{2}$ is .....

a) $\frac{3\pi}{2}$ b) $\frac{5\pi}{2}$ c) 2π d) 3π

(14) If $\tan(180^\circ + \theta) = 1$, where θ is the smallest positive angle, then θ = ...°

a) 60 b) 30 c) 45 d) 135

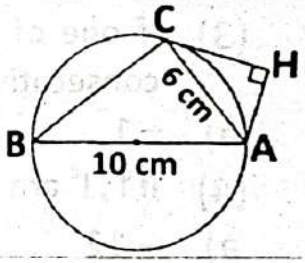
(15) Two similar polygons , their areas are 100 cm^2 , 64cm^2 and the perimeter of the first 60cm then the perimeter of the other is ...

a) 24 b) 36 c) 48 d) 75

(16) In the opposite figure:

If $\overline{AB}$ is diameter of length 10cm , AC = 6cm

$\overline{CH}$ is tangent at C , $\overline{AH} \perp \overline{CH}$ then HC = ...



a) 8 c) 4.8

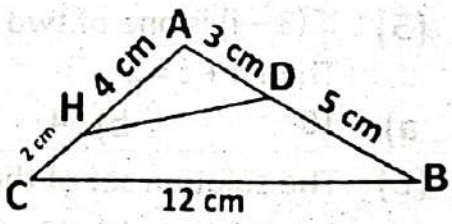
b) 6.3 d) 2.4

(17) In the opposite figure:

AH = 4 cm. ,HC = 2 cm. , AD = 3 cm.

DB = 5 cm. , BC = 12 cm. ,

then DH = ... cm.



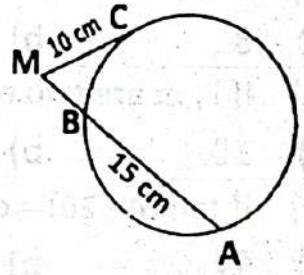
a) 4 b) 5 c) 6 d) 8

(18) In the opposite figure:

$\overline{MC}$ is tangent at C ,

AB = 15 cm. MC= 10 cm.

Then MB = ... cm.



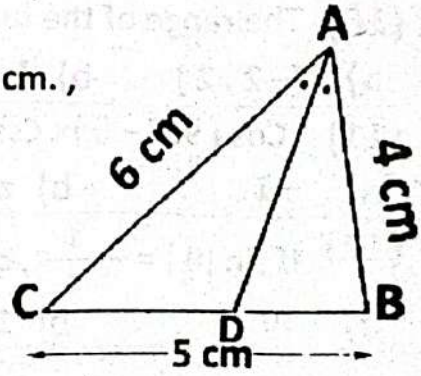
a) 5 c) 8

b) 20 d) 15

In the opposite figure:

(19) $\overline{AD}$ is a bisector $\angle$ BAC , AC = 6 cm. , AB = 4 cm. ,

BC = 5 cm. , then DC= ..... cm.



a) 1 c) 2

b) 3 d) 4

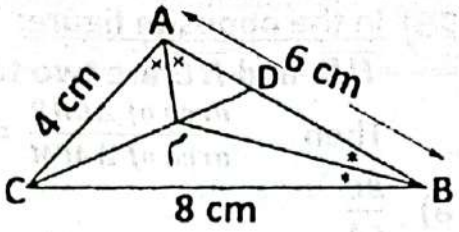
(20) In the opposite figure:

$\overline{AM}$ is a bisector ∠ BAC,

$\overline{BM}$ is a bisector ∠ ABC

$AB = 6$ cm., AC = 4 cm., BC = 8 cm.,

then AD = ... cm.



a) 1.5 b) 2 c) 3 d) 4

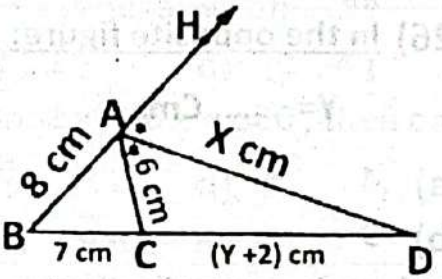
(21) In the opposite figure:

$\overline{AD}$ is a bisector ∠ CAH,

AB = 8 cm., BC = 7 cm.,

AD = X cm., DC = (Y + 2) cm.,

then (X , Y) = ...

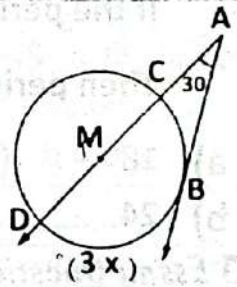


a) $(6\sqrt{15}, 19)$ b) $(6\sqrt{15}, 26)$ c) (10 , 19) d) (10 , 26)

(22) In the opposite figure:

$\overline{AB}$ is tangent at B, m ($\widehat{BD}$) = (3 X)°

m (∠ A) = 30°, then X = ...°



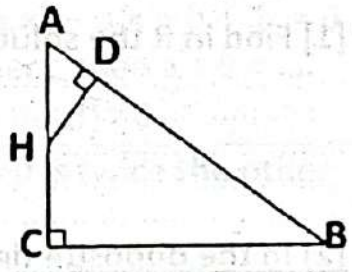
a) 30 c) 40

b) 60 d) 75

(23) In the opposite figure:

m (∠ B) = (3 X + 10)°

m (∠ AHD) = (X + 30)° Then X = ...°



a) 10 c) 20

b) 30 d) 40

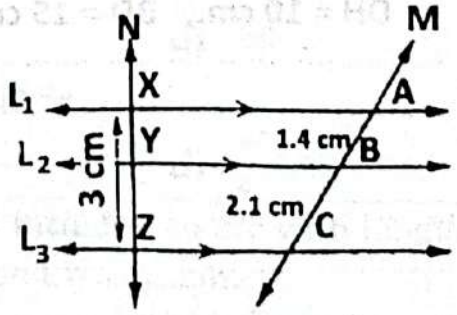
(24) In the opposite figure:

$\overleftrightarrow{L_1} // \overleftrightarrow{L_2} // \overleftrightarrow{L_3}$, AB = 1.4 cm.,

BC = 2.1 CM,

XZ = 3 cm.

then XY = ... Cm.



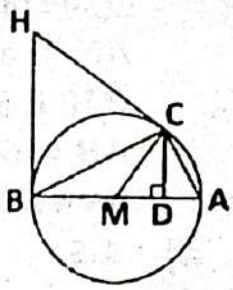
a) 1 c) 1.2

b) 1.5 d) 1.8

(25) In the opposite figure:

$\overline{HB}$ and $\overline{HC}$ are two tangents $\overline{AB}$ is diameter

Then $\frac{area\ of\ \Delta CHB}{area\ of\ \Delta ACM}$ = ...



a) $\frac{BC}{CA}$

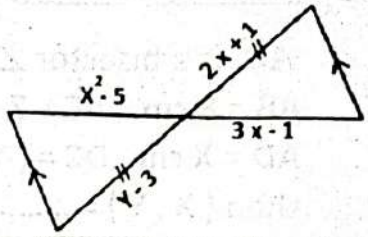
b) $\frac{BD}{AB}$

c) $(\frac{MC}{MD})^2$

d) $(\frac{BC}{AM})^2$

(26) In the opposite figure:

Y= ..... Cm.



a) 4

b) 9

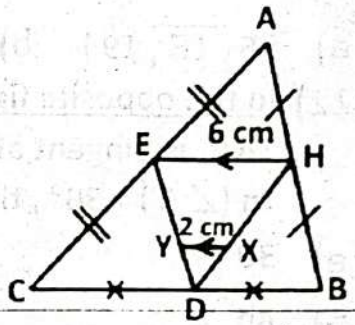
c) 11

d) 12

(27) In the opposite figure:

If the perimeter of Δ DXY = 8 cm.

Then perimeter of ΔABC = ... cm.



a) 18

b) 24

c) 36

d) 48

❒ *Essay Questions*

[1] Find in R the solution set of the inequality: $X^2 + 12 \geq X$

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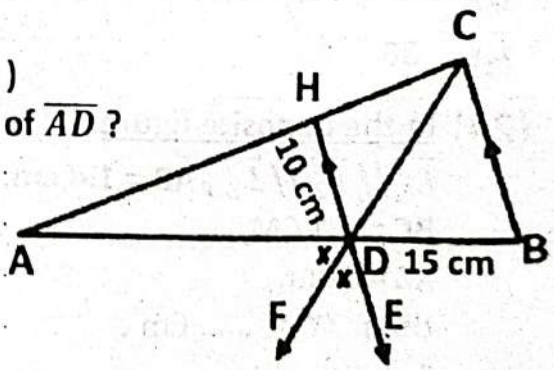
[2] In the opposite figure:

$\overline{HD} \parallel \overline{BC}$, m (∠ADF) = m (∠EDF)

DH = 10 cm., BD = 15 cm. Find length of $\overline{AD}$?



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Dakahlia Governorate Maths supervision	Exam No (9) 1st Sec - Jan. 2024	Subject : Mathematics Time : 3 Hours

[1] Choose the correct answer:

(1) $\frac{\sqrt{-36} \times \sqrt{-4}}{\sqrt{-16}}$ = ...

a) 2 b) 1 c) 2 i d) i

(2) If f : [− 2 , 4] ⟶ R the sign of f(x) = 2 − x is negative on.....

a) [− 2 , 2 [b)] 2 , 4] c) [− 2 , 2] d) [2 , 4]

(3) If m , m + 1 are two roots of the equation: $2x^2 - 6x + c = 0$, then c = ...

a) $\frac{17}{4}$ b) $\frac{19}{4}$ c) − 20 d) 4

(4) If L , M are two roots of the equation: $3x^2 - 9hx + h = 0$
(2 L − 1)(2 m − 1) = 5 ,then h = ...

a) $\frac{4}{3}$ b) $\frac{5}{8}$ c) $\frac{3}{2}$ d) $\frac{-6}{7}$

(5) If one of two roots of the equation : $ax^2 + bx + c - 5 = 0$, is Zero then ....

a) a = 1 b) a = b c) c = 5 d) b = 0

(6) The solution set of the inequality: $X^2 + 36 < 0$ in $\mathcal{R}$ is .....

a) ∅ b) $\mathcal{R}$ c) [− 7 , 7] d) $\mathcal{R}$ − [− 7 , 7]

(7) (2 − i) is one of two roots of the equation : $ax^2 - bx + b + 1 = 0$, where the coefficient of its terms are real number , then a + b = ...

a) 3 b) 4 c) 5 d) 8

(8) If one of two roots of the equation $X^2 - 3X + k = 0$ is twice the other root then k = ...

a) 4 b) 2 c) −2 d) −4

(9) If csc (A) = 2 where , 0 <A< 90° , then A=.....°

a) 15 b) 30 c) 45 d) 60

(10) The smallest positive angle of measure 900 °= .....

a) $\frac{3\pi}{2}$ b) $\frac{2\pi}{3}$ c) π d) $\frac{\pi}{4}$

(11) The central angle with measure 30° and includes an arc with length L cm. in a circle with diameter 24 cm. , then L =.....cm.

a) π b) 2π c) $\frac{1}{2}\pi$ d) $\frac{1}{6}\pi$

(12) $\cos\theta = -\frac{3}{5}$, $90° < \theta < 180°$, then $\cos(270° - \theta)$ = ...

a) $\frac{3}{5}$ b) $\frac{4}{5}$ c) $-\frac{4}{5}$ d) $-\frac{4}{3}$

(13) The range of the function $F(\theta) = 3 + cos(5\theta)$ is.....

a) $[-8, 8]$ b) $[-3, 3]$ c) $[-2, 8]$ d) $[2, 4]$

(14) The third angle of triangle whose angle are $\frac{5}{12}\pi$, 45° is .....°

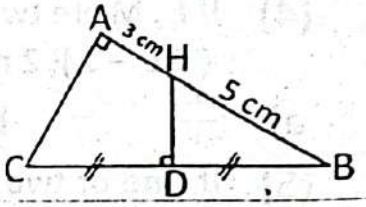
a) 90 b) 30 c) $\frac{1}{3}\pi$ d) $\frac{2}{3}\pi$

(15) Two similar polygons , the ratio between their areas is 4 : 25 , then the ratio between their perimeters is .....

a) 2 : 5 b) 5 : 2 c) 4 : 25 d) 8 : 625

(16) In the opposite figure:

DB = ...

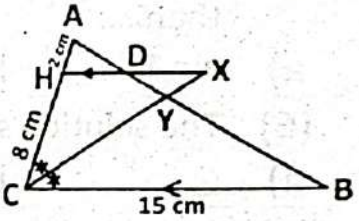


a) 3 c) 5

b) 4 d) $2\sqrt{5}$

(17) In the opposite figure:

XD = ... cm.



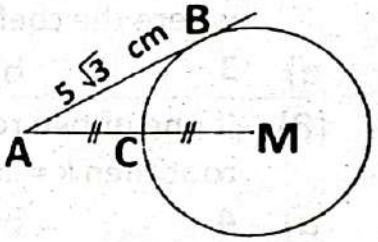
a) 3 c) 5

b) 6 d) 4

(18) In the opposite figure:

If $\overrightarrow{AB}$ is a tangent to the circle M

,if c is the midpoint of $\overline{MA}$ then its radius = ...

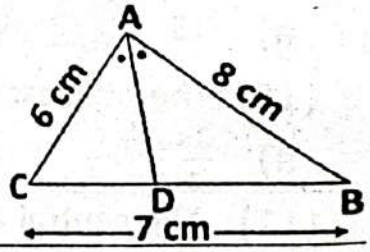


a) 5 c) c) 10

b) $\frac{5\sqrt{6}}{2}$ d) d) $\frac{5\sqrt{3}}{2}$

In the opposite figure:

(19) AD = ...



a) 6 c) 9

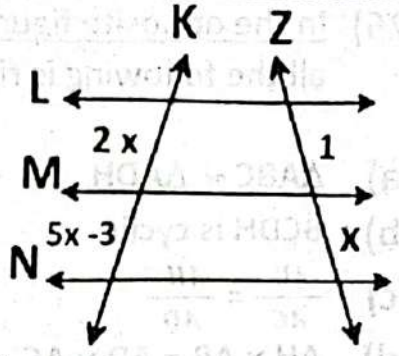
b) 10 d) $2\sqrt{15}$

(20) If $\Delta ABC \sim \Delta XYZ$, $m(\angle A) + m(\angle Z) = 80°$ then $m(Y)$ = ...°

a) 10 b) 50 c) 80 d) 100

(21) In the opposite figure:

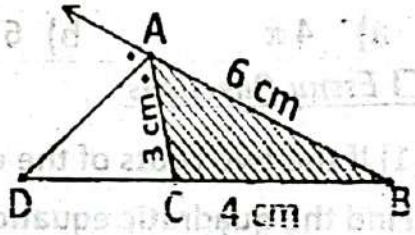
X = ...



a) 1
b) 2
c) 1.5
d) 1.5 or 1

(22) In the opposite figure:

$(AD)^2$ = ... cm

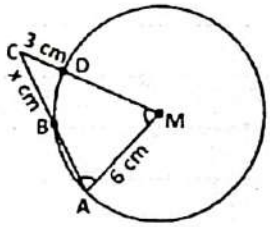


a) 12
b) 18
c) 14
d) 24

(23) In the opposite figure:

m (∠ AMC) = m (∠ MAC)

X = ...

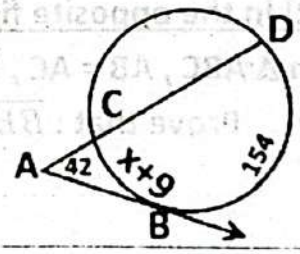


a) 3
b) 5
c) 4
d) 6

(24) In the opposite figure:

, m ($\widehat{DB}$) = 154° , m ($\widehat{BC}$) = (X + 9)°

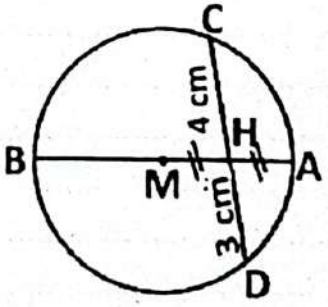
, then X = ... °.



a) 84
b) 61
c) 73
d) 21
c) 73
d) 21

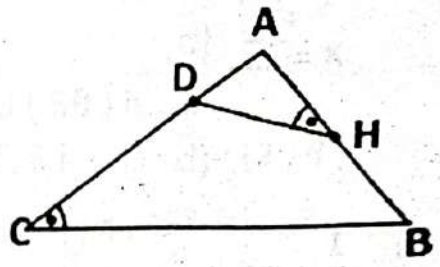
(25) In the opposite figure:

Circumference of a circle = ...π Cm.



a) 4
b) 8
c) 16
d) 20

(26) In the opposite figure:
all the following is right except



a) $\Delta ABC \sim \Delta ADH$

b) BCDH is cyclic

c) $\frac{AB}{AC} = \frac{AH}{AD}$

d) $AH \times AB = AD \times AC$

(27) If $P_M(A) = -13$ and MA = 6 cm., its area of this circle = ... Cm^2

a) 4π b) 6π c) 36π d) 49π

❐ *Essay Questions*

[1] If the two roots of the equation: $X^2 + X - 5$ are L , m ,
Find the quadratic equation whose two roots are $\frac{L}{m}$, $\frac{m}{L}$

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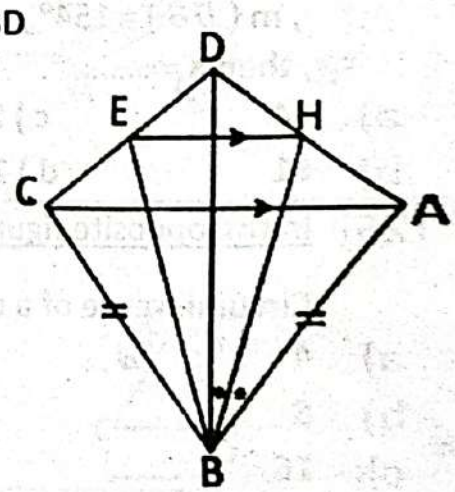
[2] In the opposite figure:

In Δ ABC , AB = AC , $\overline{HE} // \overline{AC}$, $\overrightarrow{BH}$ is bisects $\angle$ ABD

Prove that : $\overrightarrow{BE}$ is bisects $\angle$ CBD



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وزارة التربية والتعليم
الإدارة المركزية لتطوير المناهج
مكتب مستشار الرياضيات

Model Exam of First year secondary First Term 2023- 2024
Mathematics **Time: 3 hours**

نموذج استرشادى رياضيات للصف الأول الثانوى للعام الدراسى ٢٠٢٣ / ٢٠٢٤م

First: Choose the correct answer

1) Solution set of the inequality $x^2 + 49 > 14x$, in R is .....

A $\{7\}$ B $\emptyset$ C R D $R - \{7\}$

2) If $x + yi = 5 + i$, then: $xy =$.....

A 6 B 5 C 4 D 3

3) Solution set of the equation $x^2 + 25 = 0$, in the set of complex numbers is .....

A $\{-5i\}$ B $\{5i\}$ C $\{5i, -5i\}$ D $\emptyset$

4) If one of the roots of the equation $x^2 + (k+5)x - 9 = 0$, is equal to the additive invere of the other root, then: k =.....

A -5 B 3 C 5 D -3

5) If L, M *are the roots of the quadratic* equation $x^2 + 4x + 1 = 0$, then $L^2 + 4L + 1 =$.....

A -1 B 1 C -4 D *zero*

6) $i^{24} + i^{30} = \cdots$

A	-1	B	$zero$	C	$-i$	D	1

7) If $x - 2i = 3 + yi$, then the conjugate of the number: $x + yi =$.....

A	$-3 + 2i$	B	$3 - 2i$	C	$3 + 2i$	D	$-3 - 2i$

8) *If the roots of the quadratic* equation $3x^2 - 6x + \mathrm{m} = 0$ are real roots, then $\mathrm{m} \in$.....

A	$]-\infty, 3]$	B	$\{9\}$	C	$]-\infty, 3[$	D	$\{4\}$

9) If the terminal side of the acute angle θ in the standard position intersects the unit circle at the point $(\frac{-3}{5}, \frac{4}{5})$, then $\cot\theta =$ .....

A	$\frac{-3}{4}$	B	$\frac{3}{5}$	C	$\frac{-4}{3}$	D	$\frac{3}{4}$

10) $cos(90° - \theta) \times csc(\theta) =$.....

A	1	B	-1	C	$zero$	D	$tan(\theta)$

11) The angle whose measure is $\frac{-9\pi}{4}$ lies in the ..... quadrant.

A third B fourth C second D first

12) The length of the arc which is opposite to a central angle of measure 135° in a circle of diameter 16 cm equals …… cm

A 12 B 12π C 6π D 6

13) If $csc(\theta) = 2$, where θ is the measure of a positive acute angle, then $\theta =$ .....

A $60°$ B $30°$ C $15°$ D $45°$

14) $sin\theta + cos(270° + \theta) =$.....

A $2sin\theta$ B zero C $sin\theta\ cos\theta$ D 1

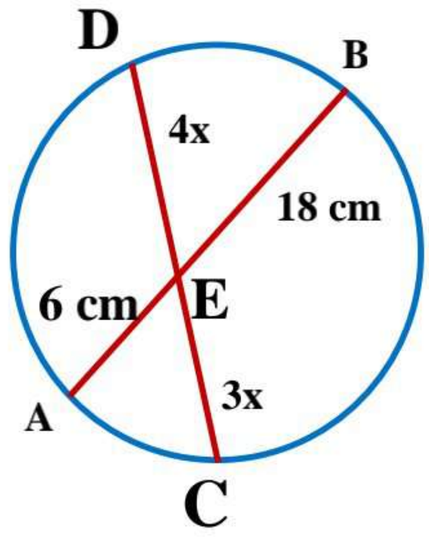
15) If Δ XYZ $\sim \Delta$ ABC , XY=3 cm, AB=6cm, BC=8 cm, then YZ=.....cm

A 2.5 B 4 C 3 D 2

16) If the ratio between the perimeter of two similar polygons is 3 : 4 and the sum of their areas 150 cm^2 , then area of the greater polygon equals …… cm^2

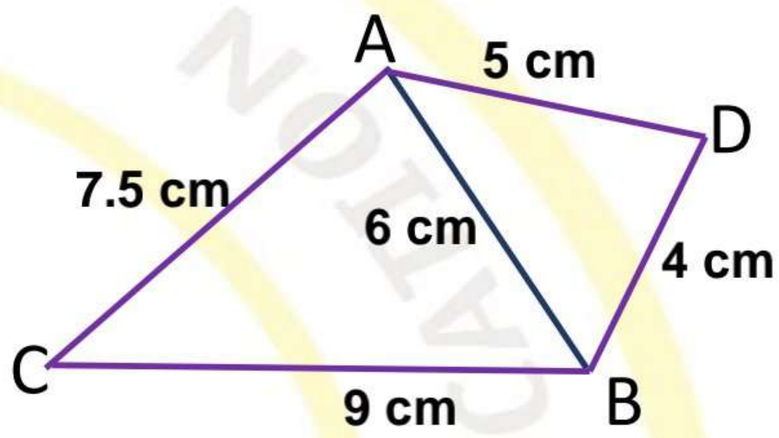
A 73 B 52 C 96 D 54

17) In the opposite figure:
If $\overline{AB} \cap \overline{CD} = \{E\}$
, AE=6 cm , EB= 18 cm ,
CE= 3x cm, ED=4x cm,
Then CD=…….. cm



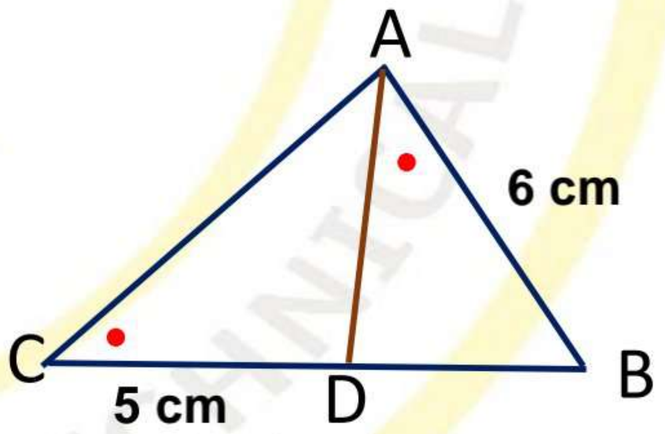
A 21 B 9 C 18 D 6

18) In the opposite figure:
$m(\angle BAC) = \cdots$



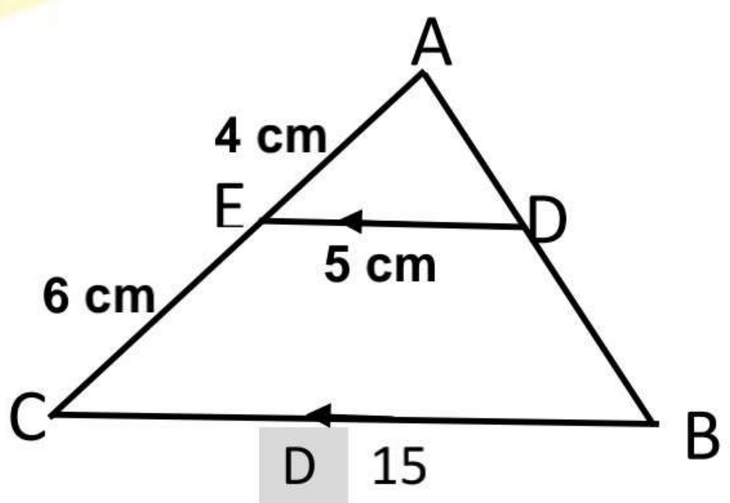
A $m(\angle DBA)$ B $m(\angle BAD)$ C $m(\angle BDA)$ D $m(\angle ACB)$

19) In the opposite figure:
ABC is a triangle in which
$D \in \overline{BC}$,
$m(\angle BAD) = m(\angle ACB)$,
AB= 6cm , CD= 5cm, then :
BC= …….. cm



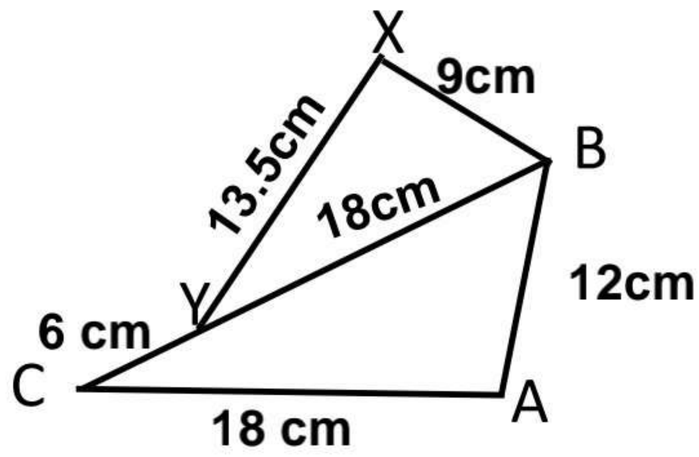
A 6 B 4 C 5 D 9

20) In the opposite figure:
ABC is a triangle in which
$E \in \overline{AC}, D \in \overline{AB}$,
$\overline{ED} \,//\, \overline{BC}$,AE= 4cm , EC= 6cm,
ED=5cm, then :
BC= …….. cm



A 10 B 10.5 C 12.5 D 15

21) In the opposite figure:
$m(\angle ABC) =$.....

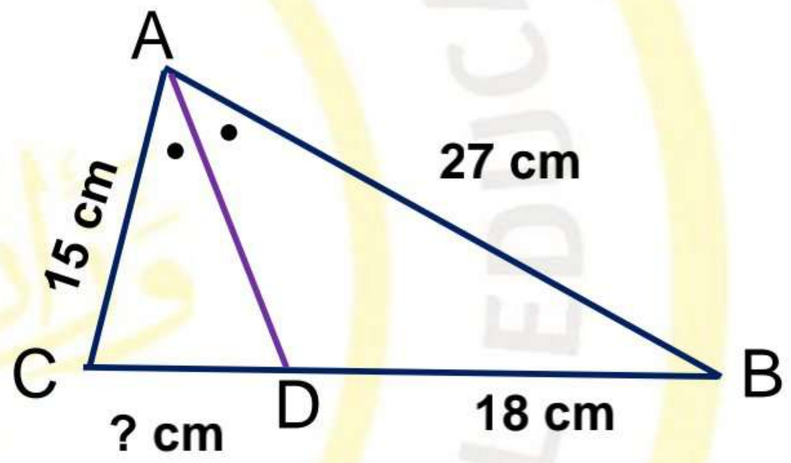


A $m(\angle BXY)$ B $m(\angle BAC)$ C $m(\angle ACB)$ D $m(\angle XBY)$

22) If the radius of a circle M equals 3 cm, A is a point lies in its plane such that MA=4 cm, Then $P_M(A)$=.....

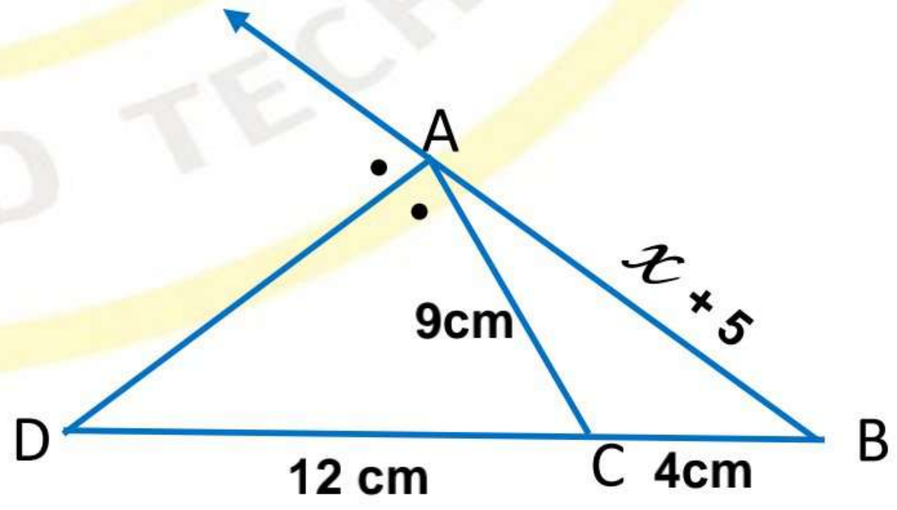
A 7 B -7 C 9 D 10

23) **In the opposite figure:**
CD=.....cm



A 6 B 10 C 5 D 15

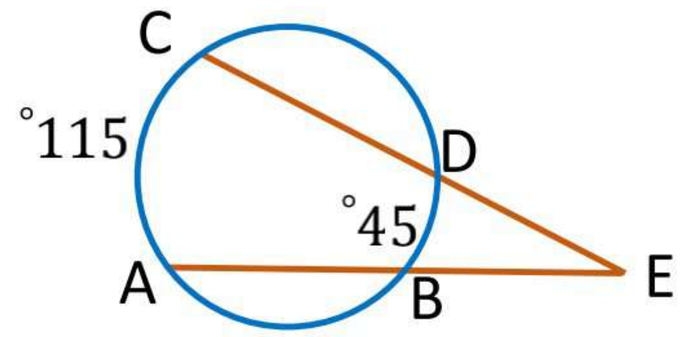
24) **In the opposite figure**:
$\mathcal{x}$ = ...cm



A 8 B 16 C 7 D 12

25) **In the opposite figure**:

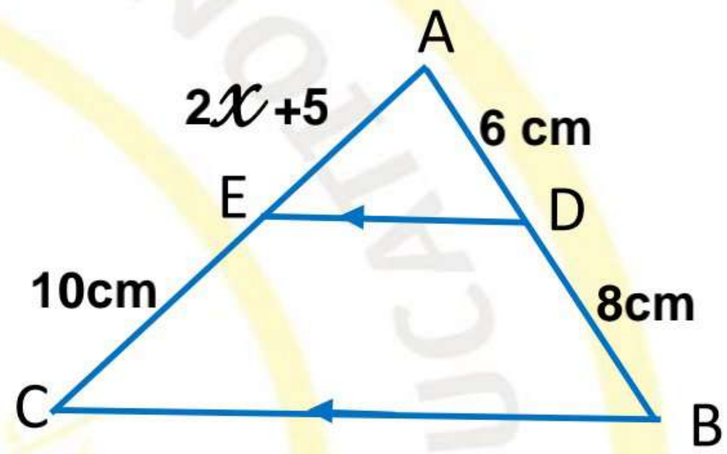
$m(\angle E) =$.....



A 90° B 60° C 45° D 35°

26) **In the opposite figure**:

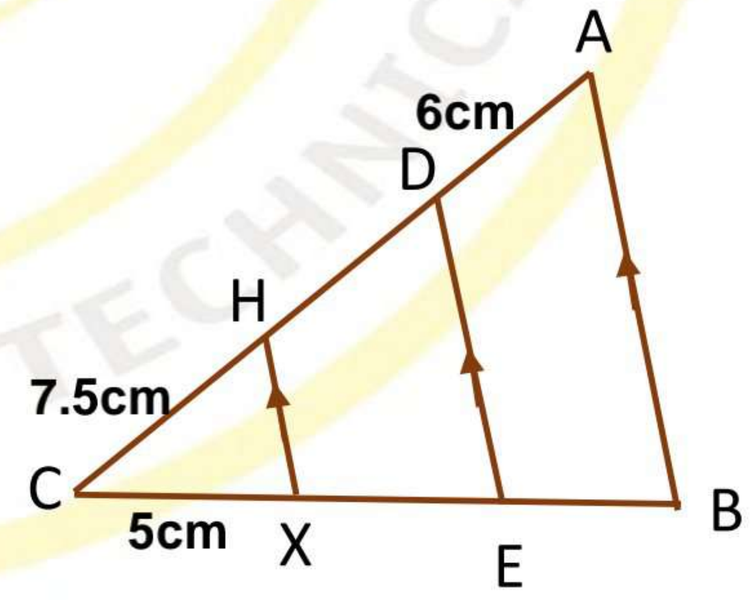
x = ...cm



A 1 B 1.25 C 1.5 D 2

27) **In the opposite figure:**

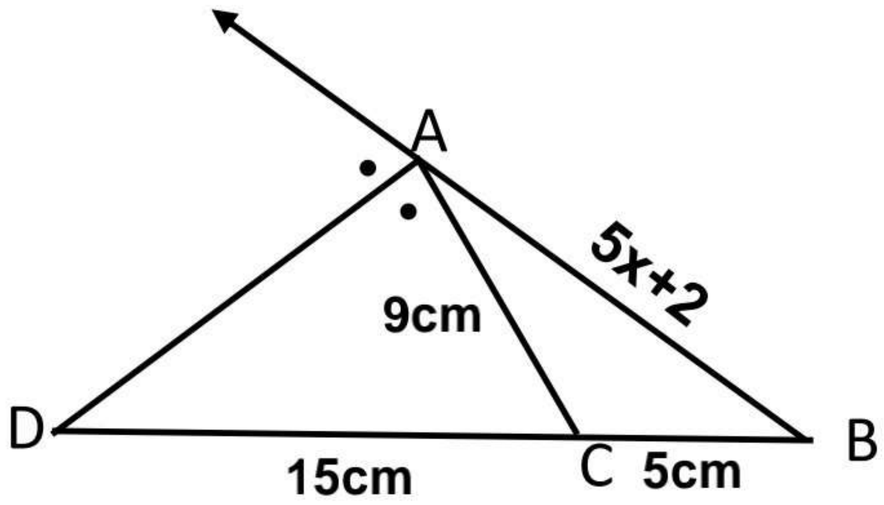
BE=.....cm



A 8 B 6 C 4 D 2

Second:

1) In the opposite figure:



$\overrightarrow{AD}$ bisects the exterior $\angle A$
AB=5x+2, AC=9cm,
BC=5cm and DC=15 cm
Find the length of AD

Solution

2) If L, M *are the roots of the quadratic* equation $x^2 - 5x + 7 = 0$,
Form the equation whose roots are: L^2 , M^2

Solution

وزارة التربية والتعليم
الإدارة المركزية لتطوير المناهج
مكتب مستشار الرياضيات

Model Answer Exam of First year secondary First Term 2023- 2024
Mathematics Time: 3 hours

نموذج اجابة استرشادى رياضيات للصف الأول الثانوى للعام الدراسى ٢٠٢٣ / ٢٠٢٤م

First

Question	1	2	3	4	5	6	7	8	9
Answer	D	B	C	A	D	B	C	A	A
Marks	1	1	1	1	1	1	1	1	1

Question	10	11	12	13	14	15	16	17	18
Answer	A	B	C	B	A	B	C	A	C
Marks	1	1	1	1	1	1	1	1	1

Question	19	20	21	22	23	24	25	26	27
Answer	D	C	D	A	B	C	D	B	C
Marks	1	1	1	1	1	1	1	1	1

Second

1) ∵ $\overrightarrow{AD}$ bisects the exterior $\angle A$

$$\therefore \frac{5x+2}{9} = \frac{20}{15}$$

$$\therefore x = 2cm \qquad \therefore AB = 12\ cm$$

$$AD = \sqrt{BD \times DC - AB \times AC}$$

$$= \sqrt{20 \times 15 - 12 \times 9} = 8\sqrt{3}\ cm$$

1

1

1

2)
$$\begin{cases} L + M = 5 \\ LM = 7 \end{cases}$$

1/2

$$\begin{cases} L^2 + M^2 = (L + M)^2 - 2LM = 11 \\ L^2\ M^2 = (LM)^2 = 49 \end{cases}$$

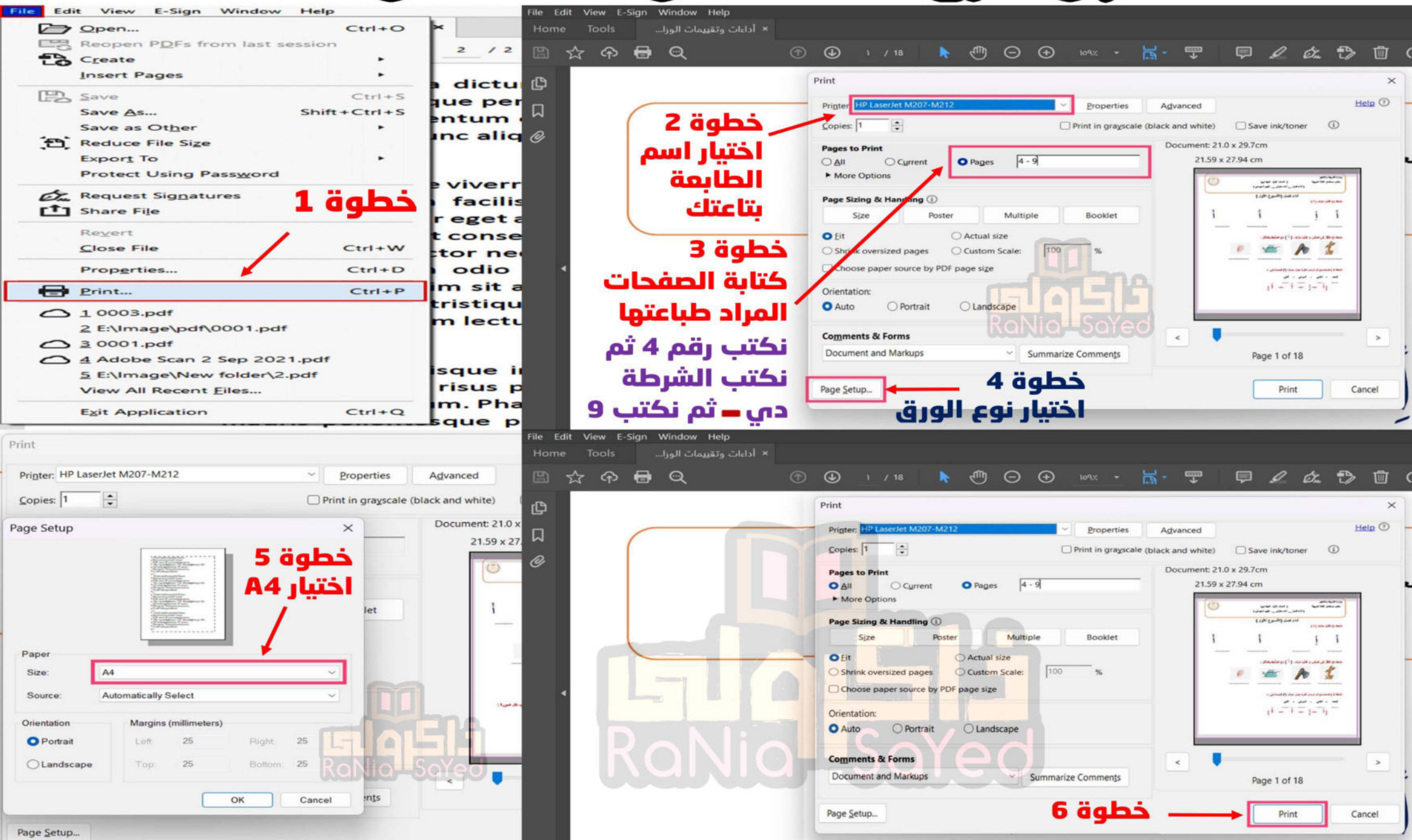
1/2

1/2

The quadratic equation $x^2 - 11x + 49 = 0$,

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



امتحانات رقم (2)

الترم الاول

TEST 1

Answer the following questions :

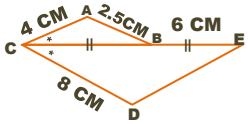
1 If $\tan(180° + \theta) = 1$ where θ is the smallest positive angle, then $\theta = \cdots\ldots\ldots\ldots$

Ⓐ $60°$ Ⓑ $30°$ Ⓒ $45°$ Ⓓ $135°$

2 In the opposite figure :

If B is the midpoint of $\overline{CE}$

, then DE = ... cm



Ⓐ 4 Ⓑ 5

Ⓒ 6 Ⓓ 7

3 In the opposite figure:

M is the centre of semi − circle

, then x = ... cm

Ⓐ 5 Ⓑ 7 Ⓒ 8 Ⓓ 12

4 The solution set of the inequality $(x - 3)(x - 7) < 0$ in R is ..... .

Ⓐ $\{3, 7\}$ Ⓑ $]3, 7[$ Ⓒ $[3, 7]$ Ⓓ $R - [2, 5]$

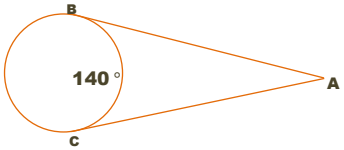
5 The exterior bisector at the vertex of an isosceles triangle ..... to the base.

Ⓐ parallel Ⓑ perpendicular Ⓒ bisects Ⓓ equal

6 In the opposite figure:

$\overline{AB}$, $\overline{AC}$ are two tangents to the circle

m $(\overset{\frown}{BC})$ 140°, then m $(\angle A)$ =.....



Ⓐ 30° Ⓑ 40°

Ⓒ 60° Ⓓ 80°

7 The roots of the equation: $k x^2 - 12 X + 9 = 0$ are equal if .....

Ⓐ $k > 4$ Ⓑ $k < 4$ Ⓒ $k = 4$ Ⓓ $k = 9$

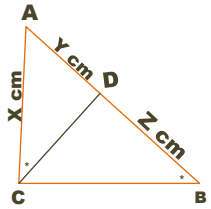
8 If the terminal side of a positive angle θ in standard position intersects the unit circle at the point $(-x, x)$ where $x > 0$ find the value of x, then find:

$$2 \sin(270° - \theta) - \csc\theta$$

9 In the opposite figure:

If $x^2 - y^2 = 16$

, then $y\,z$ =..... cm^2



Ⓐ 4 Ⓑ 8

Ⓒ 12 Ⓓ 16

10 The simplest form of the imaginary number i^{42} is .....

Ⓐ 1 Ⓑ -1 Ⓒ i Ⓓ $-i$

11 In ΔABC, $D \in \overline{AB}$ where $AD = 5$ cm., $DB = 3$ cm.

, $E \in \overline{AC}$ where $AE = 4$ cm., $EC = 6$ cm. Prove that:

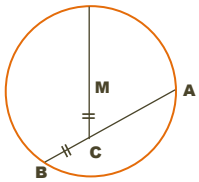
[1] $\Delta ADE \sim \Delta ACB$ [2] DBCE is a cyclic quadrilateral.

12 In the opposite figure :

The diameter of circle M is 12 cm.

, $MC = CB$ and $AC = (BC + 1)$ cm.,

then AB = ... cm.



Ⓐ 4 Ⓑ 6

Ⓒ 8 Ⓓ 9

13 The degree measure of the angle whose measure $\frac{7\pi}{6}$ equals .....

Ⓐ 105° Ⓑ 210° Ⓒ 420° Ⓓ 840°

14 Investigate the sign of the function f: $f(x) = x^2 + 3X - 10$ and illustrate it on a number line, then determine the solution set of the inequality : $x^2 + 3x \leq 10$

15 ABC is a right − angled triangle at A, $\overline{AD} \perp \overline{BC}$ where $D \in \overline{BC}$, then $(AB)^2$ =

Ⓐ $BD \times BC$ Ⓑ $BD \times DC$ Ⓒ $CD \times CB$ Ⓓ $AB \times AC$

16 If the two points $(X_1 \cos X_1) = (X_2 \cos X_2)$ lie on the curve of the function

$f(x) = \cos x$ where x in radian, then the greatest value of the expression

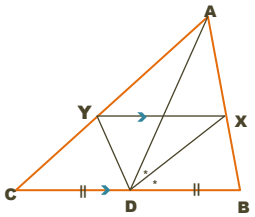
$(\cos x_1 - \cos x_2) =$

Ⓐ 1 Ⓑ 2 Ⓒ zero Ⓓ 180°

17 In the opposite figure :

[1] Prove that: $\overrightarrow{DY}$ bisects $\angle ADC$

[2] Find: m ($\angle XDY$)

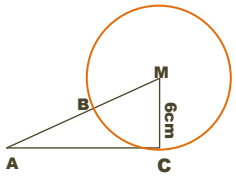


18 In the opposite figure:

$\overline{AC}$ touches the circle M at C

, $MC = 6$ cm. $p_M(A) = 64$

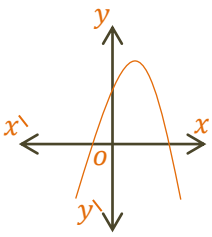
, then AB = ... cm.



(A) 3 (B) 4

(C) 5 (D) 6

19 The opposite figure represents the curve $y = ax^2 + bx + c$ which of the following is true .....



(A) $a > 0, c > 0$

(B) $a > 0, c < 0$

(C) $a < 0, c > 0$

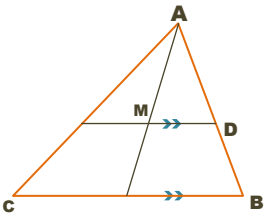
(D) $a < 0, c < 0$

20 If $\cos x = \frac{3}{5}, 270° < x < 360°$

Find the value of : $\sin(180° - X) + \tan(90° - X) + \tan(270° - X)$

21 In the opposite figure:

If M is the point of concurrence of medians of ΔABC, and $\overline{DM} // \overline{BC}$, then $\frac{DM}{BC}$



(A) $\frac{1}{2}$ (B) $\frac{1}{3}$

(C) $\frac{2}{3}$ (D) $\frac{1}{4}$

22 If A and B are the measures of two equivalent angles which of the following represents two equivalent angles also where $C \in Z$

(A) $(A + C), (B + C)$ (B) $(A - C), (B - C)$

(C) $(CA), (CB)$ (D) All the previous.

23 If the curve $y = x(a - x)$, which of the following statements is true?

[1] The curve intersects $x -$ axis at $(0, 0), (a, 0)$

[2] The vertex of the curve is $(\frac{a}{2}, \frac{a}{4})$

[3] The axis of symmetry of the curve is $x = a$

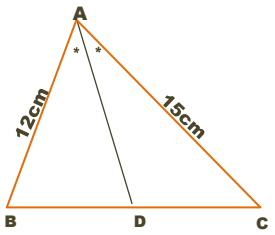
(A) [1], [2] only (B) [1], [3] only

(C) [2], [3] only (D) [1], [2] and [3]

24 In the opposite figure :

If area of $\Delta ABC = 72\ cm^2$

, then area of ΔADB = ... cm^2



Ⓐ 24 Ⓑ 28

Ⓒ 32 Ⓓ 40

25 If $\cos\theta > 0, \sin\theta < 0$, then θ lies in the ..... quadrant.

Ⓐ first Ⓑ second Ⓒ third Ⓓ fourth

26 If L, M are the two roots of the equation $x^2 - 5x + 6 = 0$, then the quadratic equation whose roots are $L + 1, M + 1$ is.....

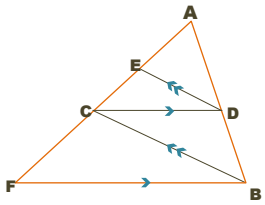
Ⓐ $x^2 - 7x + 8 = 0$ Ⓑ $(x + 1)^2 - 5(x + 1) + 6 = 0$

Ⓒ $x2 - 7x + 12 = 0$ Ⓓ $x^2 + 7x - 10 = 0$

27 In the opposite figure:

$\overline{DE} // \overline{BC}, \overline{DC} // \overline{BF}$

, then $AE \times AF$ =.....



Ⓐ $(AC)^2$ Ⓑ $AD \times AB$

Ⓒ $AE \times AC$ Ⓓ $AC \times AB$

28 ABC is right − angled triangle at B, draw $\overline{AD}$ to bisect $\angle A$ and intersects $\overline{BC}$ at D, if the length of $\overline{BD}$ = 24 cm., BA: AC = 3: 5, then the perimeter of ΔABC = ⋯.... cm.

Ⓐ 177 Ⓑ 192 Ⓒ 213 Ⓓ 184

29 If the ratio between the perimeters of two similar polygons is 4: 9, then the ratio between their areas ..... .

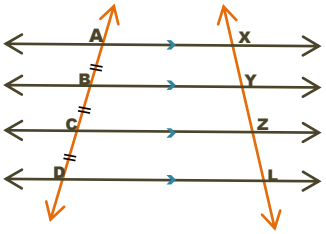
Ⓐ 2: 3 Ⓑ 4: 13 Ⓒ 16: 81 Ⓓ 4: 9

30 In the opposite figure :

$\overleftrightarrow{XA} // \overleftrightarrow{YB} // \overleftrightarrow{ZC} // \overleftrightarrow{LD}$

,$\overleftrightarrow{XL}$, , $\overleftrightarrow{AD}$ are two transversals, if XZ = 7 cm.

, then XL =..... cm.



Ⓐ 7 Ⓑ 10

Ⓒ 3. 5 Ⓓ 10. 5

31 The solution set of the inequality $x(x - 1) > 0$ in R is ..... .

Ⓐ $\{0, 1\}$ Ⓑ $]0, 1[$ Ⓒ $[0, 1]$ Ⓓ $R - [0, 1]$

32 The minimum value of the function f : f $(\theta) = 5 \cos 7\theta$ ... ...

(A) 5 (B) zero (C) -5 (D) -7

33 If $\sin \theta = -\frac{1}{2}$, $\tan\theta > 0$, then $\theta = \cdots \ldots \ldots \ldots \ldots$

(A) $30°$ (B) $150°$ (C) $210°$ (D) $330°$

TEST 2

Answer the following questions :

1 The triangle in which the measure of two angles is $50°, 60°$ is similar to the triangle in which the measure of two angles is $60°$, ...

Ⓐ $70°$ Ⓑ $110°$ Ⓒ $80°$ Ⓓ $30°$

2 If $L, 2 - L$ are the roots of the equation: $x^2 + kX + 6 = 0$, then .....

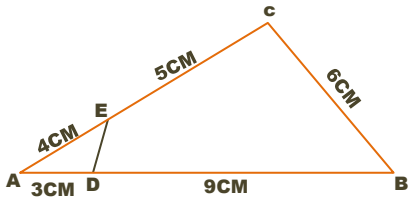
Ⓐ 1 Ⓑ -2 Ⓒ 3 Ⓓ 5

3 In the opposite figure:

$E \in AC, D \in AB$ where $AD = 3$ cm.

, $DB = 9$ cm., $BC = 6$ cm., $EC = 5$ cm., $EA = 4$ cm.

Prove that: $\Delta ADE \sim \Delta ACB$, then find the length of $\overline{ED}$



4 The function f: $f(x) = (x - 1)(x + 3)$ is positive in the interval

Ⓐ $[-3, 1]$ Ⓑ $]-3, 1[$

Ⓒ $R - [-3, 1]$ Ⓓ $R -]-3, 1[$

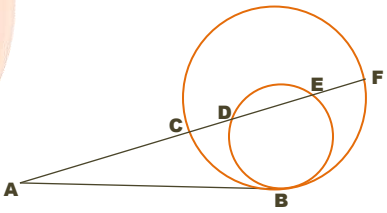
5 In the opposite figure :

If $\overline{AB}$ is a common tangent to two circles touching externally at B

, then AC: AD = ... : ... ...

Ⓐ AB: AF Ⓑ 3: 4

Ⓒ AD: AF Ⓓ AE: AF



6 Find the general solution of the equation: $\tan(\theta + 20°) = \cot(3\theta + 30°)$

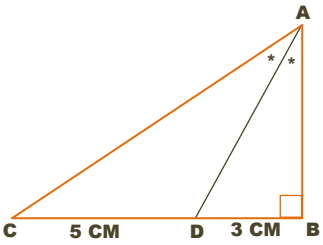
, then find the values of $\theta \in]0°, 90°[$

7 In the opposite figure :

AB = ... cm

Ⓐ 4 Ⓑ 5

Ⓒ 6 Ⓓ 7



8 If a, b are two rational numbers, then the two roots of the equation: $ax^2 + bx + b - a = 0$ are.....

Ⓐ complex and non − real. Ⓑ complex conjugate.

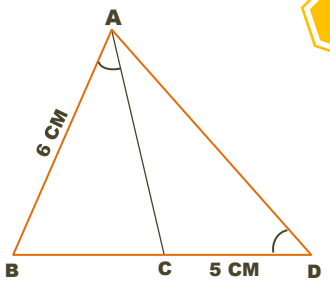
Ⓒ rationals. Ⓓ equal.

9 In the opposite figure:

$C \in \overline{BD}$, $m(\angle D) = m(\angle BAC)$

, $AB = 6$ cm., $CD = 5$ cm.

, then $BC =$ ..... cm.



Ⓐ 3 Ⓑ 4 Ⓒ 5 Ⓓ 6

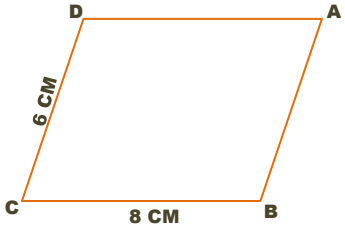
10 If L, M are the two roots of the equation : $x^2 - 2x - 5 = 0$

Form the equation whose roots are $L^2 + 1, M^2 + 1$

11 In the opposite figure :

ABCD is a parallelogram, its area $= 40$ cm^2

, then $m(\angle A) \cong \cdots\ldots$



Ⓐ 37° Ⓑ 56°

Ⓒ 53° Ⓓ 34°

12 If $P_M(A) = P_N(A)$ where M, N are two circles.....

Ⓐ AM = AN

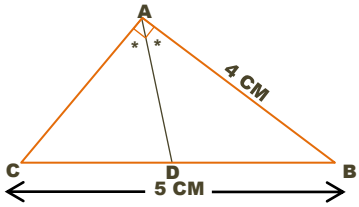
Ⓑ The radius length of M = the radius length of N

Ⓒ A lies on the line of intersection of the two circles.

Ⓓ A lies on the principle axis of the two circle M, N

13 In the opposite figure:

$BC = 5$ cm., $AB = 4$ cm., $\overline{AB} \perp \overline{AC}$, then $\frac{BD}{DC} = \cdots\ldots\ldots\ldots$



Ⓐ $\frac{4}{5}$ Ⓑ $\frac{3}{5}$

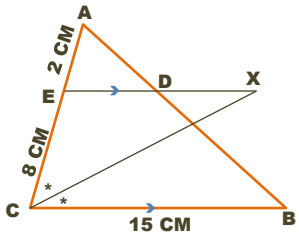
Ⓒ $\frac{3}{4}$ Ⓓ $\frac{4}{3}$

14 The arc length in a circle of raduis 6 cm. opposite to central angle of measure $\frac{\pi}{2}$ is ..... cm

Ⓐ $\frac{3\pi}{2}$ cm Ⓑ 2πcm Ⓒ $\frac{5\pi}{2}$ cm Ⓓ 3πcm

15 In the opposite figure:

If $\overrightarrow{CX}$ bisects $\angle ACB$, $\overline{XD} \parallel \overline{BC}$, then XD = ... cm

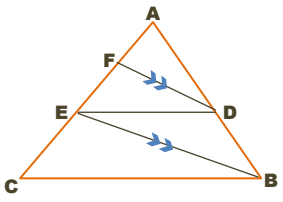


(A) 3 (B) 4

(C) 5 (D) 6

16 In the opposite figure:

If $\overline{DF} \parallel \overline{BE}$, to prove that $\overline{DE} \parallel \overline{BC}$ it is sufficient to have .....



(A) $\frac{AD}{DB} = \frac{3}{4}$ only (B) $AF \times AC = (AE)^2$ only.

(C) (a), (b) together. (D) nothing of the previous.

17 If ABC is right − angled triangle at B, $\sin A + \cos C = 1$, then $\tan C = \cdots$ .....

(A) 1 (B) -1 (C) $\frac{1}{\sqrt{3}}$ (D) $\sqrt{3}$

18 In Δ ABC, $\overrightarrow{AD}$ bisects the interior angle and intersects $\overline{BC}$ at D, if AC = 15 cm. , AB = 27 cm. , BD = 18 cm. , calculate the length of $\overline{CD}$ and $\overline{AD}$

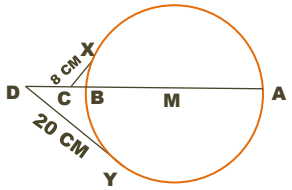
19 In the opposite figure:

If $\overline{AB}$ is a diameter in circle M

, $\overline{CX}$, $\overline{YD}$ are two tangent segments

to the circle M, AB = 30 cm. , CX = 8 cm.

, DY = 20 cm. , then DC = ... cm.



(A) 2 (B) 6 (C) 8 (D) 10

20 If the terminal side of an angle 60° in standard position rotates two and quarter revolutions anticlockwise, then the terminal side represents the angle.....

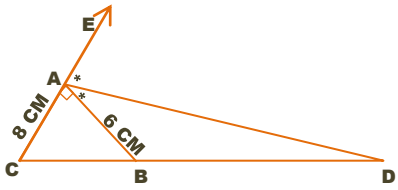
(A) 60° (B) 120° (C) 150° (D) 240°

21 The solution set of the equation : $x^2 + 9 = 0$ in the set of complex numbers is ....

(A) $\{3, -3\}$ (B) $\{-3\,i\}$ (C) $\{3i, -31\}$ (D) $\emptyset$

22 In the opposite figure:

The area of Δ ABD = ... cm^2



(A) 36 (B) 48

(C) 54 (D) 72

23 Find the values of X, y that satisfies the equation:

$$\frac{(4-3\,i)(4+3\,i)}{2+i} = x + yi$$

24 If the solution set of the inequality : $x^2 - 4 \leq x + k$ is $[-2, 3]$, then $k = \cdots \ldots$

(A) -6 (B) 1 (C) 2 (D) 10

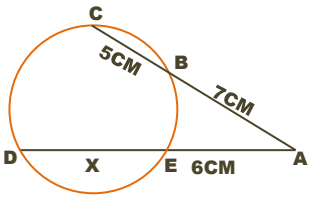
25 The range of the function $f(\theta) = 3 \sin 2\theta$ is ..... .

(A) $[-2, 2]$ (B) $]-2, 2[$ (C) $[-3, 3]$ (D) $]-3, 3[$

26 In the opposite figure :

AB = 7 cm., BC = 5 cm., AE = 6 cm.

, DE = x cm., then the value of x = ... cm.



(A) 5 (B) 14

(C) 12 (D) 8

27 A is a point outside the circle M, $\overleftrightarrow{AB}$ is a tangent to the circle at B, draw $\overleftrightarrow{AD}$ to intersect the circle at C and D, if $m(\overset{\frown}{DB}) = 150°$, $m(\overset{\frown}{BC}) = 80°$

, then $m(\angle A) = \cdots \ldots \ldots \ldots \ldots \ldots \ldots °$

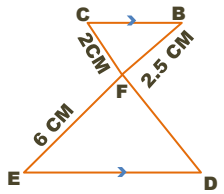
(A) 115 (B) 35 (C) 70 (D) 60

28 The terminal side of angle θ in standard position intersects the unit circle at point B $(x, \frac{3}{5})$ where $x < 0$, then $\sin(90° + \theta) =$ ..... .

(A) -0.8 (B) -0.6 (C) 0.8 (D) 0.6

29 In the opposite figure:

FD = ... cm.

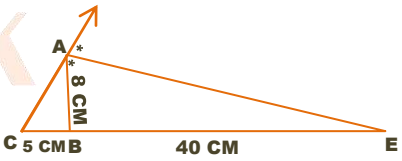


(A) 3.6 (B) 4

(C) 4.2 (D) 4.8

30 In the opposite figure:

AE = ... cm.



(A) 32 (B) 45

(C) 48 (D) $24\sqrt{3}$

31 If $\sin x = \cos y$, then $\sin(x + y) =$ .....

(A) 1 (B) zero (C) -1 (D) otherwise.

32 If one of the roots of the equation $x^2 - (m + 3)x + 3 = 0$ is additive inverse of the other , then m = ...

(A) 3 (B) -3 (C) zero (D) otherwise.

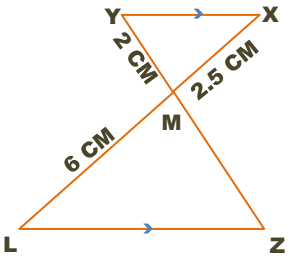
33 The two roots of the equation: $ax^2 + bx + c = 0$ are real equal if $b^2 = \cdots \ldots$

(A) 2 ac (B) a c (C) 4 a c (D) $-4ac$

TEST 3

Answer the following questions :

1 In the opposite figure:



ZM = ... cm.

Ⓐ 3.6 Ⓑ 4

Ⓒ 4.2 Ⓓ 4.8

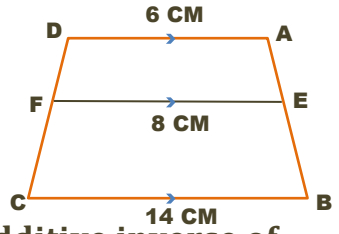
2 The simplest form of the imaginary number i^{73} = ...

Ⓐ -1 Ⓑ 1 Ⓒ i Ⓓ $-i$

3 The ratio between the length of two corresponding sides of two similar polygons is 5: 3 If the difference between their areas is 32 cm^2

Find the area of each polygon.

4 In the opposite figure:



$\frac{AE}{EB}$ = ...

Ⓐ $\frac{3}{4}$ Ⓑ $\frac{4}{7}$

Ⓒ $\frac{3}{7}$ Ⓓ $\frac{1}{3}$

5 If one of the two roots of the equation: $x^2 - (m + 2)x + 3 = 0$ is additive inverse of the other, then m = ...

Ⓐ -3 Ⓑ -2 Ⓒ 2 Ⓓ 3

6 Solve the following inequality in R: $(x+3)^2 \leq 10 - 3(x+3)$

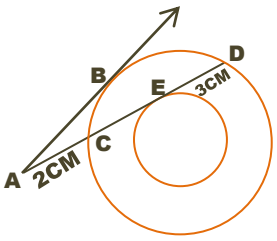
If polygon M_1 is magnification of polygon M_2 and k is the ratio of magnification , then. . . . . .

Ⓐ $k > 1$ Ⓑ $k < l$ Ⓒ $k = 0$ Ⓓ $0 < k < 1$

8 The solution set of the equation $x^2 = X$ in R is .....

Ⓐ $\{0\}$ Ⓑ $\{1\}$ Ⓒ $\{-1, 1\}$ Ⓓ $\{0, 1\}$

9 In the opposite figure:



AB = ... cm.

Ⓐ 4 Ⓑ 5

Ⓒ 6 Ⓓ 8

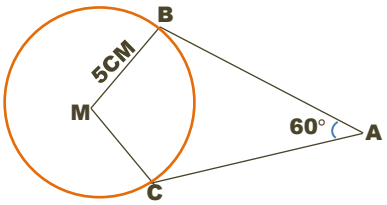
01068692290

10 In the opposite figure :

$\overline{AB}, \overline{AC}$ are two tangent segments to the circle M at B and C

, $m(\angle A) = 60°, MB = 5$ cm.

Find the length of the minor arc $\widehat{BC}$



11 If $\overleftrightarrow{AB}$ is a tangent to circle M at point B and $P_M(A) = 25\ cm^2$, then AB = ... cm

Ⓐ 5 Ⓑ 10 Ⓒ 15 Ⓓ 25

12 If L, M are the two roots of the quadratic equation $(x - a)(x - b) = k$

, then the quadratic equation whose roots a, b is ....

Ⓐ $(x - L)(x - M) = 0$

Ⓑ $(x - L)(x - M) + k = 0$

Ⓒ $(x - L)(x - M) = k$

Ⓓ $x^2 - (L + M)x + k = 0$

13 The radian measure of central angle opposite to an arc of length 3 cm.

in a circle its diameter length 4 cm. is.....

Ⓐ $(\frac{2}{3})^{rad}$ Ⓑ $(\frac{3}{2})^{rad}$ Ⓒ 5^{rad} Ⓓ 6^{rad}

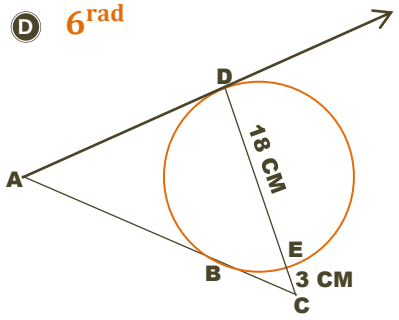
14 In the opposite figure :

$\overrightarrow{AD}, \overrightarrow{AB}$ are two tangents to the circle at D, B respectively.

$\overrightarrow{CE}$ intersects the circle at E, D

If CE 3 cm., ED 18 cm.

, then $(AC - AD) =$ ..... cm

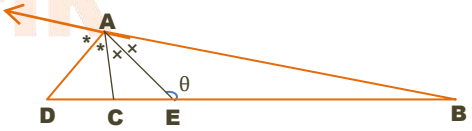


Ⓐ $\sqrt{7}$ Ⓑ $2\sqrt{7}$ Ⓒ $3\sqrt{7}$ Ⓓ $6\sqrt{7}$

15 In the opposite figure:

If AD 8 cm., AE = 6 cm.

, then $\tan\theta =$ ....



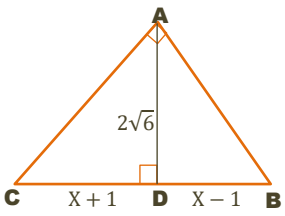
Ⓐ $\frac{-4}{3}$ Ⓑ $\frac{-3}{4}$ Ⓒ $\frac{3}{4}$ Ⓓ $\frac{4}{3}$

16 In the opposite figure:

By using the shown givens, then x = ⋯ ....

Ⓐ 5 Ⓑ 12

Ⓒ 10 Ⓓ 2.5



17 If $\sin\theta = \cos\theta$ where θ is the measure of an acute positive angle , then $\tan 2\theta$ =.....

Ⓐ 1 Ⓑ -1 Ⓒ undefined. Ⓓ $\sqrt{3}$

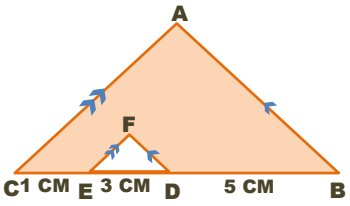
18 Prove without using the calculator :

$$\sin(600°)\cos(-30°) + \sin(150°)\cos(240°) = \sin\frac{3\pi}{2}$$

19 In the opposite figure:

If the area of Δ DEF = 6 cm^2

, then the area of the shaded area =..... cm^2



Ⓐ 27 Ⓑ 36

Ⓒ 48 Ⓓ 54

20 The function f: $f(x) = ax^2 + bx + c$ has one sign in R when.....

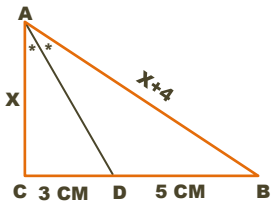
Ⓐ $b^2 - 4ac > 0$ Ⓑ $b^2 - 4ac < 0$

Ⓒ $b^2 - 4ac = 0$ Ⓓ $b^2 - 4ac \geq 0$

21 $\overline{AD}$ is a median in Δ ABC, $\overrightarrow{DX}$ bisects $\angle$ ADB and intersects $\overline{AB}$ at X , $\overrightarrow{DY}$ bisects $\angle$ ADC and intersects $\overline{AC}$ at Y, prove that: $\overline{XY} // \overline{BC}$

22 In the opposite figure:

x = ... cm.



Ⓐ 3 Ⓑ 4

Ⓒ 5 Ⓓ 6

23 The simplest form of the expression: $\sin(180° + \theta) \times \sec(270° + \theta)$ = ...

Ⓐ $2\sin\theta$ Ⓑ 1 Ⓒ -1 Ⓓ $2\sec\theta$

24 If $(3x - 5)°$ is the smallest positive measure, $(3y - 5)°$ is the greatest negative measure of two equivalent angles, then $x - y$ =.....

Ⓐ 360° Ⓑ 180° Ⓒ 120° Ⓓ 90°

25 $\cos^{-1} x + \sin^{-1} x$ =.....

Ⓐ zero Ⓑ $\frac{\pi}{4}$ Ⓒ $\frac{\pi}{2}$ Ⓓ π

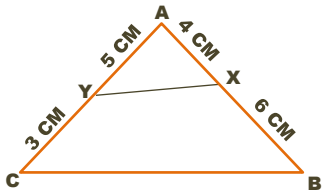
26 If $x + yi = (1 + i)^3$, then $x + y$ =.....

Ⓐ 4 Ⓑ 2 Ⓒ zero Ⓓ 6

27 In the opposite figure :

ABC is triangle, $X \in \overline{AB}$, $y \in \overline{AC}$

If XBCY is a cyclic quadrilateral, then .....



(A) $\frac{AX}{AB} = \frac{AY}{AC}$ (B) $AX \times AB = AY \times AC$

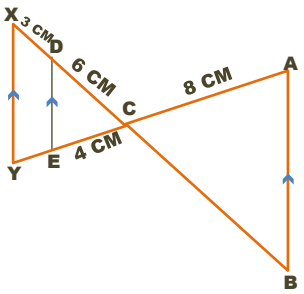
(C) $\frac{AX}{XB} = \frac{AY}{YC}$ (D) $(XY)^2 = AX \times AB$

28 In the opposite figure :

$\overline{AB} // \overline{DE} // \overline{XY}$, $\overline{AC} = 8$ cm.

, $CE = 4$ cm., $CD = 6$ cm., $DX = 3$ cm.

then $BC + EY =$ ..... cm.



(A) 12 (B) 15

(C) 8 (D) 14

29 The equation that has the two roots 3i, −3 i is.....

(A) $x^2 + 9 = 0$ (B) $x^2 = 9$ (C) $x^2 + 3 = 0$ (D) $x^2 = 3$

30 If $\sin\theta > 0, \cos\theta < 0$, then lies in the ..... quadrant.

(A) first (B) second (C) third (D) fourth

31 $\sin(90° - \theta)\sec\theta =$.....

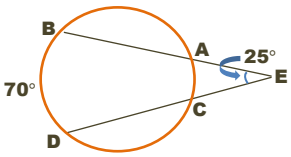
(A) 1 (B) − 1 (C) zero (D) 90°

32 If k is the scale factor of similarity between two similar polygons, then the two polygons are congruent if .....

(A) $k > 14$ (B) $0 < k < 1$ (C) $k = 1$ (D) $k = 0$

33 In the opposite figure :

$m(\overset{\frown}{AC})$ ..... °



(A) 20 (B) 30

(C) 40 (D) 50

TEST 4

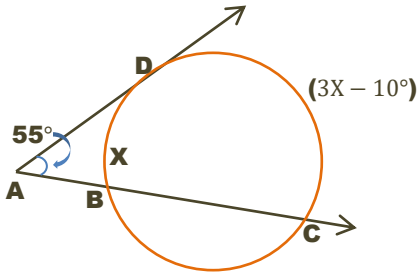
Answer the following questions :

1 In the opposite figure :

If $\overrightarrow{AD}$ is a tangent to the circle

, $m(\angle A) = 55°$, $m(\overset{\frown}{DC}) = (3x - 10°)$

, $m(\overset{\frown}{DB}) = x$, then $x =$ ..... °



Ⓐ 120 Ⓑ 60

Ⓒ 30 Ⓓ 15

2 If θ is the measure of an acute angle and $\sin(\theta + 10°) = \cos(50°)$, then θ = ...

Ⓐ 30° Ⓑ 40° Ⓒ 20° Ⓓ 50°

3 The ratio between the length of two radii of two circles is 3: 5,

if the area of the smaller circle is 27 cm^2, then the area of the greater circle equals ..... cm^2

Ⓐ 45 Ⓑ 50 Ⓒ 75 Ⓓ 100

4 Investigate in R the sign of the function f: $f(x) = 8 + 2x - x^2$ showing that on number line, then find in R the solution set of the inequality : $8 + 2x - x^2 \geq 0$

5 If $x = -1$ is one of the two roots of the equation : $x^2 - kx - 6 = 0$, then k = ...

Ⓐ 5 Ⓑ − 5 Ⓒ 6 Ⓓ − 6

6 In Δ ABC, $\overrightarrow{AD}$ bisects ∠ A internally and AB > AC, then : DC ..... DB

Ⓐ > Ⓑ ≥ Ⓒ < Ⓓ =

7 The angle of measure 3932° lies in ..... quadrant.

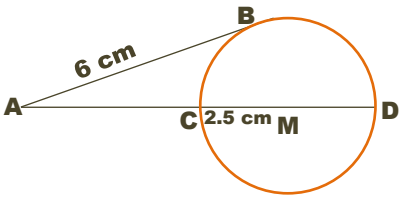
Ⓐ first Ⓑ second Ⓒ third Ⓓ fourth

8 In the opposite figure :

$\overline{AB}$ is a tangent segment to circle M

AB = 6 cm., CM = 2.5 cm.

, then AC = ... cm.

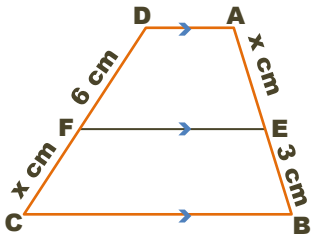


Ⓐ 9 Ⓑ 4 Ⓒ 2.5 Ⓓ 5

9 Find the general solution of the equation:

$\sin 2\theta = \cos\theta$, then find the value of $\theta, \theta \in]0, \pi[$

10 In the opposite figure :

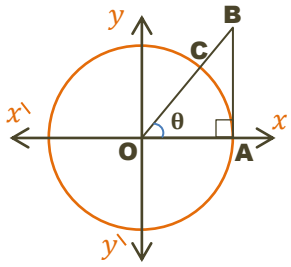


x = ... cm

(A) 6 (B) $3\sqrt{2}$

(C) $3\sqrt{3}$ (D) 18

11 In the opposite figure:



$\overline{AB}$ is a tangent segment of a unit circle, then OB =.....

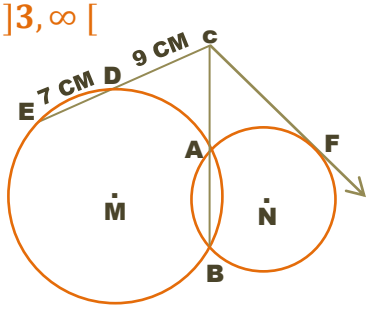
(A) $\sin\theta$ (B) $\cos\theta$

(C) $\csc\theta$ (D) $\sec\theta$

12 The function f: $f(x) = 3 - x$ is non − negative at $x \in$ .....

(A) $]-\infty, 3[$ (B) $]-, 3]$ (C) $[3, \infty[$ (D) $]3, \infty[$

13 In the opposite figure:



M and N are two intersecting circles at A and B, $C \in \overrightarrow{BA}$, $C \notin \overrightarrow{BA}$ Draw $\overrightarrow{CD}$ to intersects circle M at D, E where CD 9 cm., DE 7 cm.

Draw $\overrightarrow{CF}$ to touch circle N at F

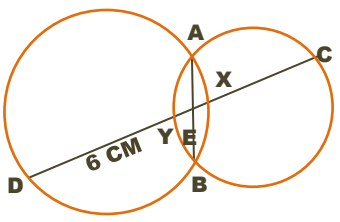
[1] Prove that: $P_M(C) = P_N(C)$

[2] If: AB = 10 cm., find the length of each $\overline{AC}$, $\overline{CF}$

14 The degree measure of an inscribed angle opposite an arc whose length 5 π cm. in a circle with radius 15 cm. equals .....

(A) 120° (B) 60° (C) 30° (D) 90°

15 In the opposite figure:



If DY 6 cm. and $\frac{XE}{EY} = \frac{2}{3}$, then CX = ... cm.

(A) 2 (B) 3

(C) 4 (D) 5

16 In Δ ABC, AB = 8 cm., AC = 4 cm., $D \in \overrightarrow{AC}$, $D \notin \overline{AC}$ where CD = 12 cm.

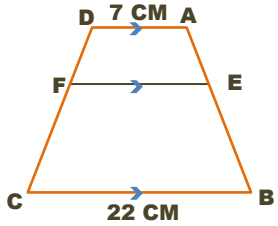
Prove that : $\overline{AB}$ touches the circle passes through the points B, C, D

17 If the function f: f (x) = a cos b X where a > 0 is a periodic function and its period $\frac{\pi}{2}$ and its range $[-1, 1]$, then $\left|\frac{a}{b}\right|$ = ...

(A) $\frac{1}{2}$ (B) 1 (C) $\frac{1}{8}$ (D) $\frac{1}{4}$

18 In the opposite figure:

$\frac{AE}{EB} = \frac{2}{3}$ =, then FE = ... cm.



(A) 9 (B) 11

(C) 13 (D) 15

19 If Δ ABC $\sim$ m ($\angle$ A) = 50°, m ($\angle$ E) = 60°, then m($\angle$ C) =.....

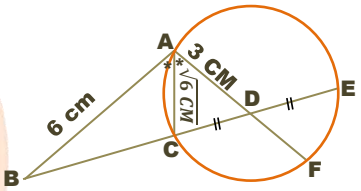
(A) 110° (B) 70° (C) 100° (D) 120°

20 In the opposite figure:

$\overrightarrow{AC}$ bisects $\angle$ BAD, D is the midpoint of $\overline{EC}$

, AC = $\sqrt{6}$ cm., AD = 3 cm.

, AB = 6 cm., then DF..... cm.



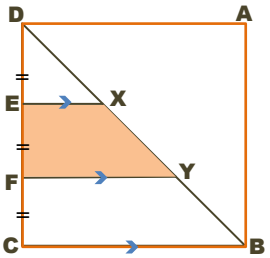
(A) 2 (B) 3 (C) 3.5 (D) 4

21 In the opposite figure:

ABCD is a square of side length 6 cm.

, DE = EF = FC

, then the area of (polygon XYFE): .....cm^2



(A) 6 (B) 8

(C) 10 (D) 12

22 If L, M are the two roots of the quadratic equation $x^2 + 1 = 0$, then $L^{2018} + M^{2018}$

(A) $-2i$ (B) $2i$ (C) -2 (D) 2018

23 If Δ ABC is right $-$ angled triangle at angle C, sin A + cos B = 1 Find the value of sin 5 A

24 If one of the two roots of the equation $(x + k)^2 - 6x = 0$ is additive inverse of the other, then k = ...

(A) 6 (B) -6 (C) 3 (D) 9

25 If the solution set of the inequality $x^2 - 10 < b\,x$ is $]-2, 5[$, then b = ...

(A) -10 (B) -2 (C) 3 (D) 5

26 The quadratic equation whose roots $\frac{3}{i}, \frac{3+3i}{1-i}$ is ..... .

(A) $x^2 - 3x + 9 = 0$ (B) $x^2 + 9 = 0$

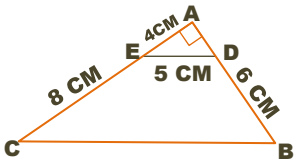
(C) $x^2 + 9x + 9 = 0$ (D) $x^2 = 9$

27 ABC is a triangle in which AB = 8 cm., AC = 6 cm.,
BC = 7 cm. Draw $\overrightarrow{(AD)}$ bisects $\angle$ BAC, $\overrightarrow{(AD)} \cap \overrightarrow{(BC)} = \{D\}$,
then BD = ... cm.

(A) 3 (B) 6 (C) 4 (D) $\sqrt{07}$

28 In the opposite figure :

$\frac{DE}{BC}$ = ...



(A) $\frac{1}{2}$ (B) $\frac{3}{4}$

(C) $\frac{1}{3}$ (D) $\frac{2}{3}$

29 If one of the roots of the equation: $3x^2 - (k+2)x + K^2 + 2k = 0$ is the multiplicative inverse of the other, then k =.....

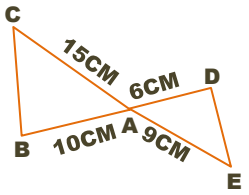
(A) -3 or 1 (B) -3 or -1 (C) 3 or -1 (D) 3 or 1

30 If $10 \sin x = 6$ where x is the greatest positive angle, $x \in [0, 2\pi[$
, then the numerical value of the expression: $\sec(540° + x)$ equals.....

(A) $\frac{3}{5}$ (B) $\frac{-5}{4}$ (C) $\frac{5}{4}$ (D) $\frac{-5}{3}$

31 In the opposite figure:

$\overline{DB} \cap \overline{EC} = \{A\}$
, AE 9 cm., AB = 10 cm., AC = 15 cm.
, DA = 6 cm., a (Δ ADE) = 36 cm^2
, then a (Δ ABC) = ⋯ ..... Cm^2



(A) 60 (B) 75 (C) 100 (D) 225

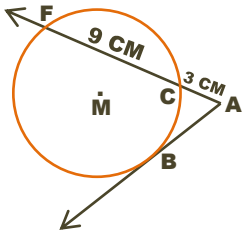
32 The range of the function f : f (x) = 4 sin x where x ∈ [0, π] equals

(A) [0, 4] (B) [0, 4[(C) [−4, 0] (D) [−4, 4]

33 In the opposite figure:

$\overrightarrow{AB}$ touches the circle M at B

$\overrightarrow{AF}$ intersects the circle M at the two points C, F respectively. If AC = 3 cm. , CF = 9 cm. , then P_M (A) = ...



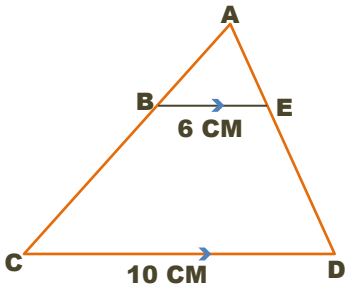
(A) 6 (B) 9 (C) 27 (D) 36

TEST 5

Answer the following questions :

1 In the opposite figure :

If $\overline{BE} \,//\, \overline{DC}$, then $\frac{\text{area of } \Delta ABE}{\text{area of trapezium BCDE}} = \ldots\ldots\ldots\ldots\ldots\ldots$

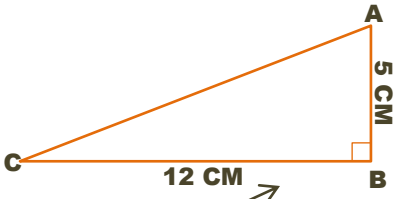


(A) $\frac{25}{81}$ (B) $\frac{3}{5}$

(C) $\frac{19}{16}$ (D) $\frac{9}{25}$

2 In the opposite figure:

$\sin\left(\tan^{-1}\left(\frac{15}{12}\right)\right) = \ldots\ldots\ldots\ldots$



(A) $\frac{5}{12}$ (B) $\frac{5}{13}$

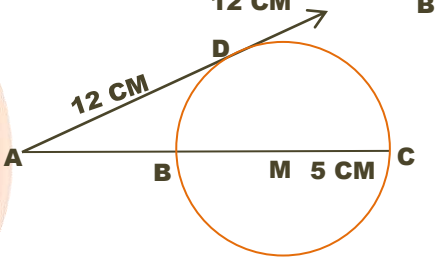
(C) $\frac{12}{13}$ (D) 13

3 In the opposite figure:

The radius of circle M is 5 cm.

$\overrightarrow{AD}$ is a tangent at D, AD = 12 cm.

Find the length of $\overline{AC}$



4 If L, M are the two roots of the equation: $x^2 + 3X - 4 = 0$, then LM = ...

(A) 3 (B) -3 (C) 4 (D) -4

5 The solution set of the equation: $x^2 + 9 = 0$ in R is.....

(A) $\{-2\}$ (B) $\{3\}$ (C) $\{-3, 3\}$ (D) $\emptyset$

6 If S, is the solution set of the inequality : $x^2 - x - 2 \leq 0$ and S_2 is the solution set of the inequality: $x^2 + X - 2 \leq 0$, then $S_1 \cap S_2$ = ...

(A) $\emptyset$ (B) $[-2, 2]$

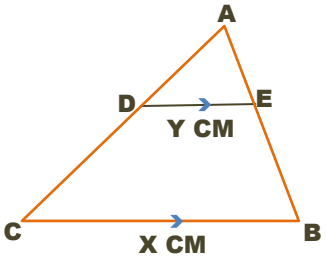
(C) $[1, 1]$ (D) $R -]-1, 1[$

7 In the opposite figure:

If $\overline{DE} \,//\, \overline{BC}$, DE = y cm.

, BC = x cm. and $2x^2 - 3xy - 5y^2 = 0$

, AB = 10 cm., then EB = ... cm



(A) 3 (B) 4 (C) 6 (D) 8

8 The angle with measure 585° in standard position is equivalent to the angle with measure

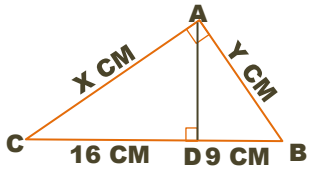
(A) $\frac{1}{4}\pi$ (B) $\frac{5}{4}\pi$ (C) $\frac{3}{4}\pi$ (D) $\frac{7}{4}\pi$

9 If $\Delta ABC \sim \Delta XYZ$ and AB = 3 XY, then $\frac{a(\Delta XYZ)}{a(\Delta ABC)} = \frac{\ldots\ldots\ldots}{\ldots\ldots\ldots}$

(A) $\frac{1}{3}$ (B) $\frac{1}{9}$ (C) $\frac{4}{1}$ (D) $\frac{9}{1}$

10 In the opposite figure:

$\frac{y}{x}$ = ...



(A) 1 (B) $\frac{4}{3}$

(C) $\frac{3}{4}$ (D) 2

11 The function $y = \sin(\frac{\pi}{4} + x)$ has maximum value at x = ...

(A) $\frac{\pi}{2}$ (B) $\frac{-\pi}{2}$ (C) $\frac{\pi}{4}$ (D) zero

12 If L, M are the two roots of the equation : $x^2 - 3x + 5 = 0$

[1] Form the equation whose roots are: $\frac{L}{m}\ \frac{m}{L}$

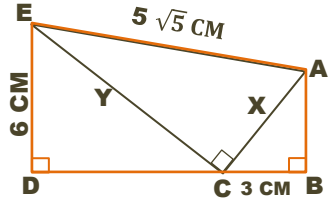
[2] Find the numerical value of the expression $(L^2 + 3M)^2$

13 The sign of f: f (x) = −5 X = x is negative at .....

(A) $x > -5$ (B) $x < -5$ (C) $x > 0$ (D) $x < 0$

14 In the opposite figure :

x + y = ... cm.



(A) 12 (B) 15

(C) 18 (D) 21

15 If $\overrightarrow{AB}$ is a tangent to a circle at B, $\overrightarrow{AC}$ intersects the circle at C, D where C $\in \overline{AD}$, AC = 3 cm. AB = 6 cm. , then CD = ... cm.

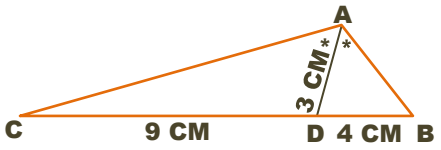
(A) 6 (B) 9 (C) 12 (D) 15

16 If $\sin\theta = \frac{4}{5}$ where $90° < \theta < 180°$ Find the value of :

$\sin(180° - \theta) + \tan(360° - \theta) + 2\sin(270° - \theta)$

17 In the opposite figure :

AB × AC..... cm^2



(A) 36 (B) 45

(C) 12 (D) 27

18 In circle M, if two chords $\overline{AB}$ and $\overline{CF}$ intersecting at D, then .....

(A) $P_M(D) = (AB)^2 - r^2$ (B) AD × DB = AM × MB

(C) $P_M(D) + AD \times DB$ = zero (D) $P_M(D) = CD \times DF$

19 If $x = \frac{13+13i}{5+i}$, $y = \frac{5+i}{1+i}$ find x + y

20 If $\tan(4\theta) = \cot(5\theta)$, then $\sin(3\theta)$ = ... where 3θ is the measure of acute angle.

(A) $\frac{1}{2}$ (B) 1 (C) − 1 (D) $\frac{\sqrt{3}}{2}$

21 If the degree measure of an angle is 64° 48`, then its radian measure is .....

(A) 0.18^{rad} (B) 0.36^{rad} (C) 11.3^{rad} (D) $\frac{9}{25}\pi$

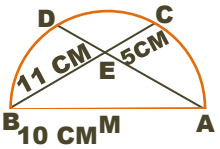
22 In the opposite figure:

The radius length of semicircle (M) = 10 cm.

, then ED = ... cm.

(A) $\frac{50}{13}$ (B) $\frac{55}{13}$

(C) $\frac{57}{13}$ (D) $\frac{59}{13}$



23 In the opposite figure :

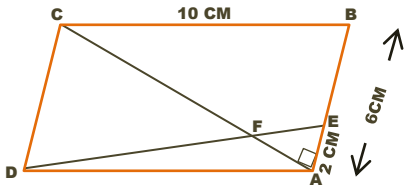
ABCD is a parallelogram in which

$AB = 6$ cm., $BC = 10$ cm., $m(\angle BAC) = 90°$

, $E \in \overline{AB}$ such that: $AE = 2$ cm.

, $\overline{DE}$ intersects $\overline{AC}$ at F

Prove that: Δ AFE is an isosceles triangle.



24 If the two roots of the equation: $a x^2 + bx + c = 0$ are equal in value but different in signs, then .....

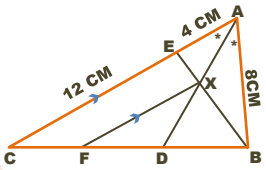
Ⓐ $c = 0$ Ⓑ $a = 0$ Ⓒ $b = 0$ Ⓓ otherwise.

25 In the opposite figure:

$\frac{DF}{BC}$ = ...

Ⓐ $\frac{4}{3}$ Ⓑ $\frac{2}{3}$

Ⓒ $\frac{3}{5}$ Ⓓ $\frac{1}{3}$



26 If the distance between point A from the centre of a circle equals 24 cm. and the power of this point with respect to this circle equals 176, then the radius length of this circle equals ..... cm.

Ⓐ $4\sqrt{47}$ Ⓑ 400 Ⓒ 20 Ⓓ 38

27 The length of an arc opposite to a central angle of measure 150° in a circle with radius length 8 cm ... ... equals

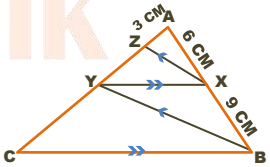
Ⓐ $\frac{20}{3}\pi$ Ⓑ $\frac{17}{3}\pi$ Ⓒ 8π Ⓓ 20

28 In the opposite figure :

$\overline{XY} // \overline{BC}, \overline{XZ} // \overline{BY}$

, $AX = 6$ cm., $XB = 9$ cm., $AZ = 3$ cm.

, then the length of $\overline{ZC}$ = ...cm



Ⓐ 4. 5 Ⓑ $15\frac{3}{4}$ Ⓒ 15 Ⓓ $12\frac{3}{4}$

29 If $\sin 2\theta = \cos \theta$, then θ could be equal ... ... °

Ⓐ 18 Ⓑ 30 Ⓒ 36 Ⓓ 20

30 If $(2\ i)$ is a root of the quadratic equation : $x^2 + a\,x + b = 0$ where the coefficients of its terms are real numbers, then all the following are true except.....

(A) The other root of the quadratic equation is $(-2\ i)$

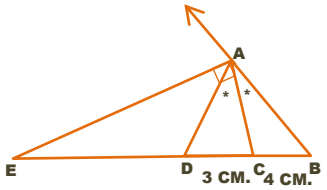
(B) The sum of the roots $=$ zero

(C) The product of the roots $= -4$

(D) The discriminant of the quadratic equation $<$ zero

31 In the opposite figure:

$\overrightarrow{AC}$ bisects $\angle$ A of triangle ABD internally.



, $\overline{AE} \perp \overline{AC}$, BC $= 4$ cm.

, CD $= 3$ cm. , then BE: ED $=$ .....

(A) 7: 4 (B) 7: 3 (C) 3: 4 (D) 4: 3

32 If f $(x) = x + 2$, where $x \in]-4, 3[$, then f (x) is positive at $x \in$ ... ...

(A) $]-\infty, -2[$ (B) $]-2, \infty[$ (C) $]-4, -2[$ (D) $]-2, 3[$

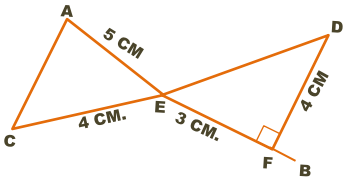
33 In the opposite figure :

If $\overline{AB} \cap \overline{DC} = \{E\}$, AE $= 5$ cm.

, EF 3 cm. , EC4 cm. , DF $= 4$ cm.

, $\overline{DF} \perp \overline{BE}$, the points A, B, C, D lie on the circumference of a circle

, then the length of $\overline{FB}$ $=$ .....



(A) 0. 5 (B) 1 (C) 1. 5 (D) 2

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9